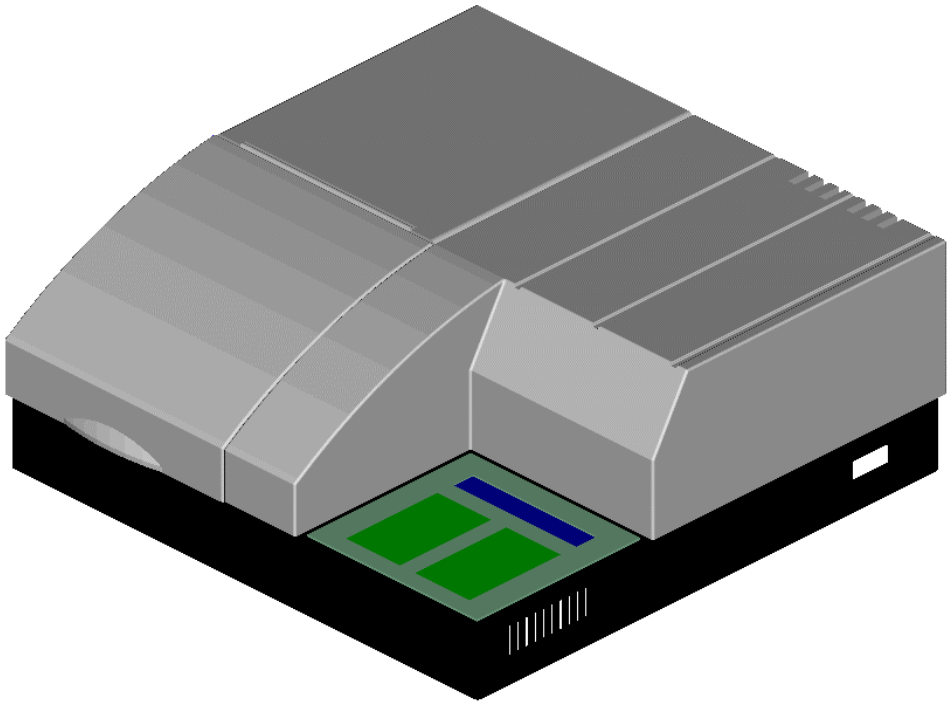
ELx50™ Automated Strip Washer

Service Manual



ELx50™ Automated Strip Washer

Service Manual

December 2000
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PART NUMBER 4071008
REVISION E
BIO-TEK® INSTRUMENTS, INC.

Notices

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Revision

Revision	Date	Changes
A	8/97	Released to Production.
B	4/98	Updated assembly drawings and Bills of Material.
C	6/98	Updated TAC phone numbers.
		Edited/reformatted text throughout for clarity.
D	8/99	Updated contact information for Coordination Center Europe/Africa.
		Added Section 1: General Information and Section 2: Functional Description.
		Updated assembly drawings and bills of material to include support for the 16-channel manifold.
E	12/00	Updated service procedures ,BOM's and drawings

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Bio-Tek warrants the instrument (hereinafter collectively referred to as "Products" or "Product") for a period of one (1) year from the original purchase date against defective materials or workmanship. This Warranty is limited to the original purchaser (the "Purchaser") and cannot be assigned or transferred. All claims under this Limited Warranty must be made in writing to Bio-Tek, Attention: Service Department. Purchaser must ship the Product to Bio-Tek, postage pre-paid. Bio-Tek shall either repair or replace with new or like new, at its option and without cost to the Purchaser, any Product which in Bio-Tek's sole judgment is defective by reason of defects in the materials or workmanship.

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General Information

Purpose and Scope

This document is a service manual. It provides technical information for qualified service personnel to assemble and test the functionality of the ELx50 line of instrumentation, and assumes a general understanding of the Bio-Tek Instruments, Inc. ELx50 Automated Strip Washer product line.

This manual should be used in conjunction with the "Operator's Guide for the ELx50 Automated Strip Washer", Bio-Tek part number **4071000**.

Certain sections of this manual contain copies of documentation that is currently in use at Bio-Tek. All documentation is subject to revision over time. Schematics are included in this manual if component-level repair is necessary. Assembly drawings are included to aid in the assembly and disassembly of the ELx50.

If you need further information, please contact the Technical Assistance Center:

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Technical Assistance Center
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Winooski, Vermont USA 05404-0998

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1-802-655-4044	From outside the United States, excluding Europe
33 1 39 30 2276	From within Europe

Fax:

1-802-655-3399	USA
33 1 39 30 0987	Europe

Email:

LabTAC@BioTek.com

Abbreviations and Symbols

The following warning and informational symbols may be found in various locations on the ELx50 Strip Washer. Only qualified personnel who recognize shock hazards and are familiar with the safety precautions should repair this instrument.

Alternating current
Courant alternatif
Dreiphasen-Wechselstrom
Corriente Atterna
Corrente alternata

Direct current
Courant continue
Gleichstrom
Corriente continua
Corrente continua

Both direct and alternating current
Courant continu et courant alternatif
Allstrom (Gleich - und Wechselstrom)
Corriente continua y corriente alterna
Corrente continua e corrente alternata

Earth ground terminal
Borne de terre
Erde (Bettriebserde)
Borne de Tierra
Terra (di funzionamento)

Protective conductor terminal
Borne de terre de protection
Schutzleiteranscluss
Borne de Tierra de Protección
Terra di protezione

On (Supply)
Marche (alimentation)
Ein (Verbindung mit dem Netz)
Connectado
Chiuso

Off (Supply)
Arrest (alimentation)
Aus (Trennung vom Netz)
Desconectado
Aperto (sconnessione dalla rete di alimentazione)

Caution (refer to accompanying documents)
Attention (voir documents d'accompanement)
Achtung siehe Begleitpapiere
Atención (vease los documentos incluidos)
Attenzione, consultare la doc annessa

Caution, risk of electric shock
Attention, risque de choc electrique
Gefährliche elektrische Spannung
Atención, riesgo de sacudida eléctrica
Alta tensione (in questo documento Alta tensione non significa “tensione pericolosa” come definito in IEC 417)

Warnings

Use the ELx50 Automated Strip Washer on a flat surface and away from excessive humidity.

When operated in a safe environment, according to the instructions in this manual, there are no known hazards associated with the ELx50. However, the operator should be aware of certain situations which could result in serious injury. Do not reach under the instrument during operation, as the syringe pump may pinch your fingers.

Hazards

Warning! Power Rating. The ELx50 Strip Washer's power supply must be connected to a power receptacle that provides voltage and current within the specified rating for the system. Use of an incompatible power receptacle may produce electrical shock and fire hazards.

Warning! Electrical Grounding. Never use a two-prong plug adapter to connect primary power to the ELx50 power supply. Use of a two-prong adapter disconnects the utility ground, creating a severe shock hazard. Always connect the system power cord directly to a three-prong receptacle with a functional ground.

Warning! Internal Voltage. Always turn off the power switch and unplug the power cord before cleaning the washer's outer surface.

Warning! Liquids. Avoid spilling liquids on the washer; fluid seepage into internal components creates a potential shock hazard. Wipe up all spills immediately. Do not operate the instrument if internal components have been exposed to fluid.

Warning! Potential Biohazards. Some assays or specimens may pose a biohazard. Adequate safety precautions should be taken as outlined in the assay's package insert. Always wear safety glasses and appropriate protective equipment, such as chemically resistant rubber gloves and apron.

Warning! Software. The washer operator must follow the manufacturer's assay package insert when modifying software parameters and establishing wash methods, using the washer's on-board software.

Precautions

The following precautions are provided to help avoid damage to the instrument:

Caution: Service. The washer should be serviced by Bio-Tek authorized service personnel. Only qualified technical personnel should perform troubleshooting and service procedures on internal components.

Caution: Environmental Conditions. Do not expose the instrument to temperature extremes. For proper operation, ambient temperatures should remain between 15-40ºC. Performance may be adversely affected if temperatures fluctuate above or below this range. Storage temperature limits are broader.

Caution: Sodium Hypochlorite. Do not expose any part of the instrument to Sodium Hypochlorite solution (bleach) for more than 30 minutes. Prolonged contact may damage the instrument surfaces. Be certain to rinse and thoroughly wipe all surfaces.

Caution: Wash Buffer Solution. Although many precautions have been taken to ensure that the instrument is as corrosion-proof as possible, the washer is not sealed and liquids can seep into sensitive components. Make sure that any spilled wash buffer solution is wiped off the washer. Prolonged exposure to salt solution may corrode parts of the microplate carrier, movement rail, springs and other hardware.

Caution: Warranty. Failure to follow preventive maintenance protocols may void the ELx50 warranty.

Equipment Overview

There are several models in the ELx50 Washer product line. "G" refers to a Generic instrument, and "V" indicates a "Valve" instrument with the multiple valve hardware.

PART NUMBER	DESCRIPTION
ELX50/8	Strip Washer, 8-Well Manifold
ELX50/8G	Strip Washer, 8-Well Manifold, (Generic)
ELX50/8V	Strip Washer, 8-Well Manifold, w/Valves
ELX50/8GV	Strip Washer, 8-Well Manifold, (Generic), w/Valves
ELX50/8S	Strip Washer, 8-Well Manifold, Short Dispense
ELX50/8GS	Strip Washer, 8-Well Manifold, (Generic), Short Dispense
ELX50/8VS	Strip Washer, 8-Well Manifold, W/ Valves, Short Dispense
ELX50/8GVS	Strip Washer, 8-Well Manifold, (Generic), W/ Valves, Short Dispense
ELX50/12	Strip Washer, 12-Well Manifold
ELX50/12G	Strip Washer, 12-Well Manifold, (Generic)
ELX50/12V	Strip Washer, 12-Well Manifold, w/Valves
ELX50/12GV	Strip Washer, 12-Well Manifold, (Generic), w/Valves
ELX50/16	Strip Washer, 16-Well Manifold
ELX50/16G	Strip Washer, 16-Well Manifold, (Generic)
ELX50/16V	Strip Washer, 16-Well Manifold, w/Valves
ELX50/16GV	Strip Washer, 16-Well Manifold, (Generic), w/Valves

Functional Description

Principles of Operation

This section of the manual discusses the principles of operation for each sub-assembly within the ELx50 Automated Strip Washer.

Overview

The **ELx50 Automated Strip Washer** performs microwell strip washing functions consistent with Enzyme Immuno Assay (EIA) needs. These functions include aspirating from and dispensing into 1x8 or 1x12 microwell strips and 96- and 384-well plates. Flat, round, and 'V' bottom strips are accommodated. A variety of wash parameters are user-programmable via the on-board software.

This instrument is powered by an external 24 volt power supply. An internal positive displacement pump delivers wash buffer to the microwells from a 2-liter supply bottle. The positive displacement pump allows for control of a variety of flow rates and volumes. An internal vacuum pump aspirates liquid from the microwells into a waste collection vacuum vessel. Stepper motors provide accurate and repeatable carrier and manifold positioning.

Hardware

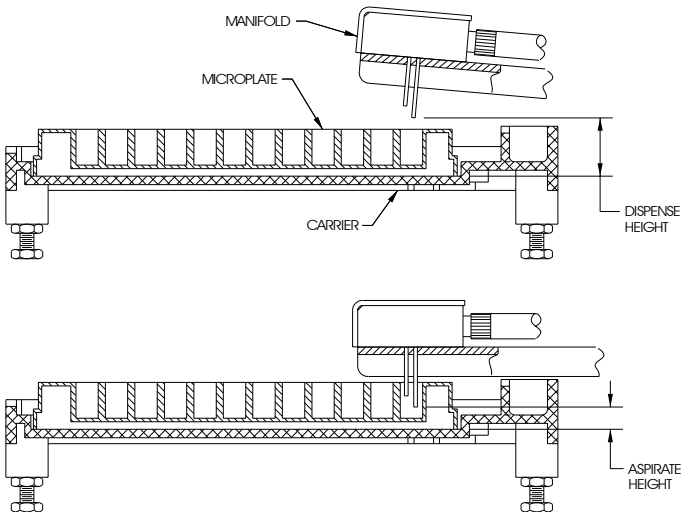
Controller

The strip washer is a microprocessor-driven device with memory sufficient to perform all functions described in the “ELx50 Software Requirements Specification”, Bio-Tek part number 4076200, and for storage of up to 75 washer programs. Washer programs can be defined directly from the washer keypad, or they can be downloaded to the washer from a separate computer via the RS232 port, using the Define Reader protocol..

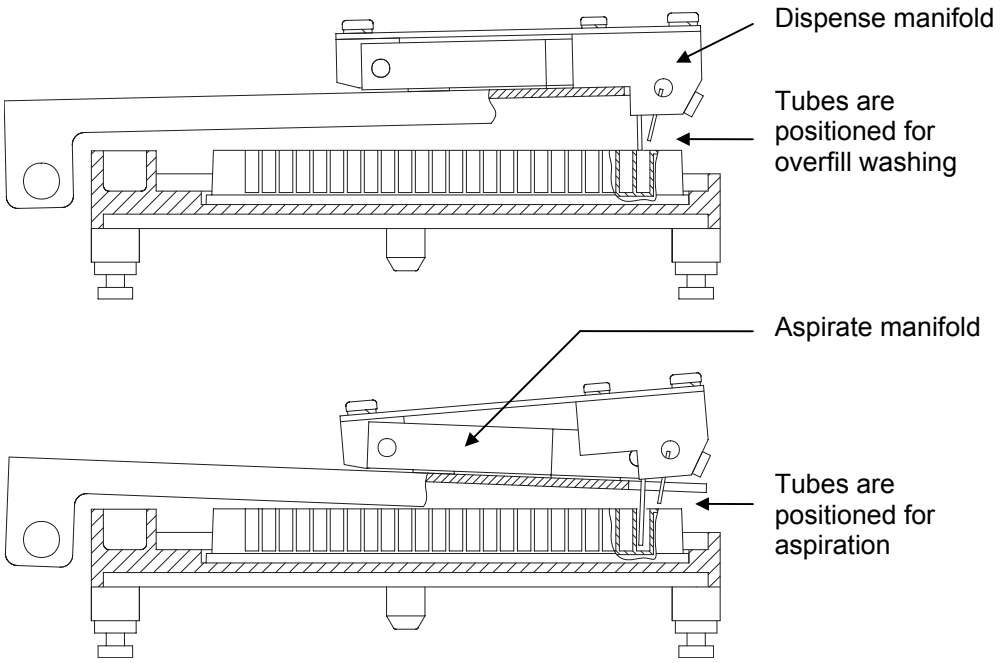
Manifold

Aspirating from and dispensing into the microwells can occur through a 1x8, 1x12, or a 1x16 manifold. There is no automatic detection of which if any manifold is present. Only one manifold is included with an instrument, with the other manifolds available as accessories. The manifolds are easily removed and serviceable by the user. They are constructed in a manner which allows for, and with materials that are not damaged by, chemical decontamination with 0.5% sodium hypochlorite or 70% ethanol.

The ELx50/16 models contain the patented dual-manifold design. The 16-channel manifold has 16 sets of dispense and aspirate tubes arranged in a fixed horizontal position relative to each other but located in two separate manifolds. The two manifolds move independent of each other in the vertical axis. This design overcomes the problem of fitting both dispense and aspirate tubes into the much smaller 384-well at the same time, yet it allows for overfill washing of the smaller 384 wells. The dispense tubes are held above the plate when the dispense manifold reaches a mechanical stop, while the aspirate tubes are able to continue descending into the wells.



Single manifold system of the 8- and 12-channel manifolds.



Patented dual-manifold system of the 16-channel manifold.

The following table shows the washing capabilities of each manifold:

Manifold:	Washing Capabilities
8-channel	8-well strips, 96-well plates
8s-channel*	8-well strips, 96-well plates
12-channel	12-well strips, 96-well plates
16-channel	8-well strips, 96-well plates, 384-well plates

* The 8s-channel manifold has shorter dispense tubes for special applications.

The ELx50 washer supports the washing of standard flat, round, and 'V' bottom microwells.

Note: The 16-channel manifold uses two aspirating tubes for each well when used with 8-well strips and 96-well plates. For these formats, it may be difficult for the tubes to reach the very bottom of round or 'V' bottom wells, possibly leading to higher residuals.

An ELx50 washer *can* be reconfigured to support a different manifold. The level of difficulty for reconfiguration depends on the current and desired manifolds. *Appendix C* in the *ELx50 Automated Strip Washer Operator's Manual* discusses manifold reconfiguration.

Carrier

There are two possible plate carrier assemblies, p/n **4070526** for the 16-channel washer models and p/n **4070508** for all of the other models.

- 4070508 holds 96-well plates and 1x8 or 1x12 strips, and may be used with either the 1x8 or 1x12 manifold.
- 4070526 holds 384-well plates, 96-well plates, and 1x8 strips, and may be used with either a 1x16 or 1x8 manifold.

Strips must be placed in their frames to be held by the carrier. The carrier positions the strips beneath the manifold where wash solution is aspirated from and dispensed to the test wells. The carrier is removable by the user and is constructed in a manner which allows for, and with materials that are not damaged by, chemical decontamination with 0.5% sodium hypochlorite or 70% ethanol. There is a priming/soaking trough that is the normal home position for the manifold and which is an integral part of the carrier.

Carrier to Manifold Positioning

Carrier movements are controlled by a timing belt and microstepping stepper motor. Positions are configured for 1x8, 1x12, and 1x16 well columns. Resolution of carrier position is 0.002 inches (minimum). Through the on-board software, the carrier position can be offset from the factory default settings to optimize washing performance in a specific plate type or with a specific chemistry.

Manifold Vertical Positioning

The washing manifold moves vertically by a microstepping stepper motor control. It is possible for the user to offset the vertical position of the aspirating tubes relative to the carrier surface to optimize washing performance. This offset is in equal increments, no greater than 0.005 inches. The offset range is from 0.100 to 1.0000 inches above the carrier top surface. The manifold vertical positioning design allows for the manifold to lift as the aspirate tubes touch the well bottom and in that way compensate for vertical misalignment of the manifold and strips.

Positive Displacement Pump

Wash solution, rinse solution, and disinfecting solutions are delivered to the microwells by a built in positive displacement pump (syringe pump). The pump draws fluid from the supply bottles and forces it through the dispense tubes of the manifold. It is possible to dispense at one of nine different flow rates, by running the

pump at different voltages. The flow rate is selectable by the user within the on-board software. The on-board software contains calibration values for each flow rate.

Vacuum Pump

The ELx50 has an internal vacuum pump which is cycled on and off as needed.

Vessels and Connections

There are two 2-liter supply bottles (three if "V" version washer). No self-sealing pressure vessels are required for fluid supply. Each supply vessel has a hole in its cap that retains a suction tube. A single inlet supply tube to the strip washer is connected to one or the other of these supply bottles though a pair of fittings. Typically one bottle will be used for wash buffer solution and the second bottle will be used for deionized water rinse. The user will disconnect the supply tube from the suction tube of one supply bottle and connect it to the suction tube of the other supply bottle when switching from one solution to the other. There is no supply bottle liquid level detection. It is the responsibility of the user to monitor and refill the supply bottles.

The washer may or may not have the multiple-valves hardware (“V” version washers). Washers equipped with this hardware prompt the user to enter a supply bottle designation (A, B, or C), at program run-time, and then use that bottle when running the program.

There is one 2-liter waste vessel. The waste vessel has a sealing closure with one inlet and one outlet. It is connected to an internal vacuum pump and a vacuum is created in the waste vessel. The vessel is strong enough to withstand the external atmospheric pressure present under these conditions. The collection vessel also connects directly to the manifold and solution is aspirated from the test wells by the manifold and pulled into the collection vessel.

An optional hydrophobic vacuum filter may be placed in line between the vacuum pump and the collection vessel. This filter impedes aerosols from entering the vacuum pump and therefore the room, and waste from being pulled into the vacuum pump in the event of a collection vessel overflow. It is the responsibility of the user to monitor and periodically empty the waste vessel. There is no waste vessel level detection.

Display and Keypad

The washer is equipped with a 2x24 character LCD display and a 25-key keypad.

Power Supply

The washer is supplied with a 24 volt external power supply and cable.

Decontamination

All exposed surfaces are designed to be chemically disinfected with 0.5% sodium hypochlorite and 70% ethanol.

Aerosol Cover

The fluid dispensing region is covered with an aerosol cover. The aerosol cover is easily removed to provide access to the manifold and plate carrier.

Software

The ELx50 washer is operated by on-board software, controllable through the washer's keypad. This on-board software, referred to as the "basecode", has an identifying **part number.**

Your washer is installed with one of two possible ELx50 basecode part numbers: 4070201 or 4070230. Each part number in turn has an identifying **version number.** If you need to contact Bio-Tek Instruments for technical assistance, you will be asked for the part number and version of the basecode currently residing on your washer.

- To locate this information, press these keys from the washer's main menu:

  `UTIL` → `TESTS` → `CHKSUM`

  The basecode part number and accompanying version number will appear for a few seconds, followed by additional configuration information. The display will automatically return to the main menu.

The **4070201** basecode supports the following features:

- Compatibility with the 8-, 8s-, and 12-channel manifolds.
- An easy to use, menu-driven interface.
- Ability to create Wash, Prime, Dispense, and Aspirate programs for automated microplate washing.
- Storage of up to 75 washer programs.
- User-definable washer program names, for rapid recall at program run time.
- Configurable program parameters such as variable soaking, multispeed shaking, bottom washing, and crosswise aspiration.
- Pre-defined washer programs that can be copied and used as the basis for new programs.
- Pre-defined maintenance programs, including AutoPrime, used to keep the manifold tubes moist and free from clogging.
- Support for the following languages: English, French, German, Italian, and Spanish. Note: Contact Bio-Tek for information on changing to a different language.

The **4070230** basecode supports all of the 4070201 features, *plus* the following:

- Compatibility with the 16-channel manifold, for **384-well plate washing.**
- Ability to create **Soak** and **Link programs.**

The basecode is downloaded from a PC to the washer via the serial communication port.

- To prepare the washer for basecode software download, press `SHIFT+HIDDEN KEY #1` from the main menu. Hidden key #1 is between the `CLEAR` and `ENTER` keys.
- To download the software, exit to DOS and type `A:\DLOAD 1` and press Enter. "`A`" represents the drive containing the basecode diskette and "`1`" represents the com port.
  - For detailed basecode download instructions, refer to 8291007-AW Field Software Download Procedure.

Configuration Software

The ELx50 washer requires information downloaded from a configuration software disk, containing default washer programs, diagnostics programs, and a configuration file (config.50).

It is NOT recommended that you modify the config.50 file. The on-board software provides ample parameters for adjusting horizontal positions, dispense and aspirate height, etc. Contact Bio-Tek engineering with any specific questions or suggestions.

The configuration software is downloaded from a PC to the washer via the serial communication port, using Bio-Tek's Download Utility.

- To prepare the washer for configuration software download, press `SHIFT+HIDDEN KEY #2` from the main menu. Hidden key #2 is between the `Main Menu` and `Previous Screen` keys.
- For configuration download instructions, refer to 8291007-AW Field Software Download Procedure.

Error Codes

Homing an Axis

When any motor axis is moved to sensor home, its position is set to 0. Sensor home and the home position are not necessarily the same. The following is a description of how each axis is moved to sensor home. For the Carrier and Syringe axis there are two ways the motor can move to sensor home:

1. If the carrier or syringe is on the sensor(typically at home) then the axis is moved off the sensor plus 3 full steps. The axis is then moved toward the sensor until the sensor is marked.
2. Otherwise the carrier or syringe axis is off the sensor and the axis is moved toward the sensor until the sensor is marked.

For the manifold, the process is similar:

1. If the sensor is open (typically at home), then the axis is moved away from the sensor until the sensor is marked, plus 3 full steps. The manifold is then moved toward the sensor until the sensor is open.
2. Otherwise the manifold axis is moved toward the sensor until the sensor is open.

Carrier Axis Home Position

The carrier home position is defined to be sensor home plus an offset. This offset, Carrier Home Offset, is presently defined in System Configuration The only time that sensor home and the home position are the same is if this value is set to zero.

Manifold Axis Home Position

The manifold home position is defined to be sensor home.

Syringe Axis Home Position

The syringe home position is defined to be sensor home plus an offset. This offset, Syringe Home Offset, is presently defined in System Configuration The only time that sensor home and the home position are the same is if this value is set to zero.

Verifying an Axis

Manifold

When the verification is performed on this axis, the software compares the number of steps observed at its present position to the actual number of steps required to move the axis back to the sensor home position. At the completion of any program, the manifold position is verified. There are two scenarios:

1. If the manifold is on the sensor or the observed motor position is less than 3 full steps from the sensor, then the manifold is moved away from the sensor 6 full steps. The manifold is then moved toward the sensor until the sensor is marked. If the observed motor position is outside the range of -3 full steps to plus 3 full steps inclusive, then an error is generated.
2. Otherwise the manifold is moved toward the sensor until the sensor is marked. If the observed motor position is outside the range of -3 full steps to plus 3 full steps inclusive, then an error is generated.

Syringe

There are five distinct actions that are being tested to insure the syringe is functioning correctly.

1. At the beginning of each syringe intake stroke, the software checks to insure that the optical sensor is marked. If the sensor is not marked, an error is generated.
2. During the syringe intake stroke, the software detects how many steps the syringe travels before the sensor changes from marked to open. If this number of steps falls outside the specified range (syringe sensor clear +/- Syringe FMEA Range) then an error is generated.
3. At the beginning of each syringe dispense stroke, the software checks to insure that the optical sensor is open. If the sensor is not open then an error is generated.
4. After completion of a Dispense, Prime or Wash Program, the software checks to insure that the optical sensor is marked. If the sensor is not marked and error is generated.

5. When power-up or self test is performed, the number of steps from syringe home position to clear the sensor is determined (syringe sensor clear). If this value is greater than the value specified, Syringe_FMEA_Offset, then an error is generated. This determined value is then used during step 2 along with Syringe FMEA Range to determine a failure.

Carrier

When the verification is performed on this axis, the software compares the number of steps observed at its present position to the actual number of steps required to move the axis back to the sensor home position. At the completion of a dispense, aspirate or wash program, the carrier position is verified. There are two scenarios:

1. If the carrier is on the sensor or the observed motor position is less than 3 full steps from the sensor, then the carrier is moved away from the sensor 6 full steps. The carrier is then moved toward the sensor until the sensor is marked. If the observed motor position is outside the range of -3 full steps to plus 3 full steps inclusive, then an error is generated.
2. Otherwise the carrier is moved toward the sensor until the sensor is marked. If the observed motor position is outside the range of -3 full steps to plus 3 full steps inclusive, then an error is generated.

Error Codes

Non-fatal errors :

Error	Error Code	Brief Description
ABORT_ERR	0x0100	wash function aborted
NO_SENSOR_ERR	0x0200	(*motor) couldn't find optical-sensor
AUTOCAL_JIG_ERR	0x0300	(*motor) couldn't find edge of hole in jig
MOTOR_VERIFY_ERR	0x0400	(*motor) failed positional verify
UNDEF_PROG_TYPE_ERR	0x0500	undefined program type specified
PROGRAM_NUM_ERR	0x0600	invalid (assay number)
PROGRAM_SET_ERR	0x0700	invalid write attempt
PROGRAM_DEL_ERR	0x0800	invalid delete attempt
SYR_VOLUME_TO_LARGE	0x0900	syringe volume to large
PROGRAM_CHECKSUM_ERR	0x0A00	checksum failure (assay number)
MANIFOLD_AUTOCAL_ERR	0x0B00	invalid manifold for calibration
INVALID_BUFFER_ERR	0x0C00	invalid buffer selected
CAL_CHECKSUM_ERR	0x0D00	failed calibration checksum test
DISPENSE_RATE_ERR	0x0E00	dispense rate is invalid for manifold type
DISPENSE_VOLUME_ERR	0x0F00	dispense volume invalid for manifold type
CNFG_DATA_ERR	0x1000	necessary configuration data missing
CNFG_CHECKSUM_ERR	0x1100	failed configuration checksum test
CAL_DATA_ERR	0x1200	necessary calibration data missing
MOTOR_NOT_HOMED_ERR	0x1300	(*motor) not homed successfully
AUTOCAL_ABORT_ERR	0x1400	autocal of washer was aborted
MALLOC_ERR	0x1900	memory allocation failure
ASPIRATE_POS_ERR	0x1A00	Carrier offset position is out of range for present manifold
DISPENSE_POS_ERR	0x1B00	Carrier offset position is out of range for present manifold
SYRINGE_FMEA_ERR	0x1C00	1=sensor not found at start of syringe aspirate stroke. 2=sensor not open at start of dispense stroke. 3=syringe aspirate stroke failure 4=sensor verify after last syringe stroke in program failed 5= sensor clear from home position too many steps
MANIFOLD_POS_ERR	0x1D00	could not calculate manifold position for offset provided
AUTOCAL_CHECKSUM_ERR	0x1E00	autocal checksum error

*Motor Identification

Motor Axis	Axis Number
Manifold	0
Carrier	1
Syringe	2

Fatal errors:

Error	Error Code	Brief Description
TCB_NOT_AVAIL_ERR	0xA100	task control block not available
READ_NOT_AVAIL_ERR	0xA200	reader function already in use
NOT_AVAIL_ERR	0xA300	(device) not available
CHECKSUM_ERR	0xA400	failed code checksum test on power up
POWER_ERR	0xA500	power dropped below safe level
QFLASH_TIMEOUT_ERR	0xA600	quick flash configuration timed out
QFLASH_ERR	0xA700	quick flash read didn't match write

All of these items are system configuration values which can be changed and loaded via extensions without a rebuild of the software:

System Configuration

Parameter	Default	Range	Units
Vacuum Pump Startup Delay	0	0-10	seconds
Vacuum Pump Dissipation Delay	10	0-10	seconds
Trough Dispense Height	96	12-180	
Trough Aspirate Height	30	12-180	
Trough Clearance Height	146	12-180	
Prime Aspirate Delay	3000	0-5000	milliseconds
Crosswise Clearance Height	64	12-180	
Extended Soak Delay	30	15-600	seconds
Extended Soak Vacuum Delay	30	15-600	seconds
Syringe Backlash	7	0-100	full steps
Volume per Step (syringe)	12.32	0-1000	ul/step
Maximum Stroke (syringe)	9000	0-65000	ul
Carrier Overshoot	2	0-10	full steps
Carrier Home Offset	20	0-50	full steps
Plate Clearance	146	12-180	
Valve Open Delay	0	0-65000	milliseconds
Valve Close Delay	0	0-65000	milliseconds
Syringe Home Offset	-160	-1600 to +1600	16^{th} steps, full step resolution
Syringe FMEA Offset	560	0-16000	16^{th} steps, full step resolution
Syringe FMEA Range	160	0-16000	16^{th} steps, full step resolution

See the Operation section of the operator's manual for current information.

Bulletins

This section contains Mandatory and recommended field change notices / bulletins.

Mandatory Field changes

FCN L0015

SERVICE BULLITEN

DATE: 31-MAR-98
ENGINEER: TOM GRAVELIN

CHANGE PRIORITY: Mandatory

PURPOSE**:** To reduce the plate carrier noise when in motion. This change should be performed on ELx50 units with serial numbers below 137288 (Rev 21-Apr-99)

DISCUSSION: When the plate carrier was in motion, the plate carrier would vibrate against the carrier slide. A load spring is to be added to reduce the vibration.

EQUIPMENT REQUIRED:

1) Ball end 3/32" hex wrench
2) Slider Load Spring (4072063)
3) Slider Load Plate (4072064)

CORRECTIVE ACTION:

1) Perform the modifications per the ELx50 Slider Upgrade Kit Instructions (4070004-AW) See 4070004-AS Kit Slider Upgrade (Page 1 of 1), page 5-3.
2) End of procedure

Non Mandatory Field Changes

Eco 32194

Replace the O-ring (49259) on the 4070509 assembly with O-Ring (45045).

L0021

SERVICE BULLITEN

DATE: 2 SEPTEMBER, 1999

CHANGE PRIORITY: Discretionary

PURPOSE**:** ELx50 piston for the syringe was installed without being polished.

DISCUSSION: ELx50 pistons, Part Number 4072060, .were installed without the part being polished to reduce friction on the Teflon seal. This will cause the Teflon seal to wear prematurely and will eventually leak. This Teflon seal could wear after one (1) year of use. The polished piston would take years before the Teflon seal wears. The serial number range is :

144664 - 144699
145600 - 145648

Only eighteen (18) unit are affected. The ship dates were between June 23, 1999 and July 30 1999.

CORRECTIVE ACTION:

For all units returned to Bio-Tek Instrument Inc.

Remove the Syringe and visually verify the piston appears to be polished. It should be a high gloss mirror stainless steel finish. If the finish appears slightly dull, then replace with a polished part.

PARTS REQUIRED:

QTY:	PART DESCR.	BTI PART #
1	Piston, Syringe Pump Polished	4072060

PROCEDURE:

1) Verify the unit serial number is within the suspected serial number ranges. If not, then do not proceed.
2) Remove the two flat head screws holding the syringe.
3) Remove the syringe from the syringe piston.
4) Inspect the Piston. It should have a mirror finish. If the finish is slightly dull and does not have a glossy/mirror finish, remove the syringe piston by removing the flat head screw that is located on the head of the piston.
5) Install the new piston (part # 4072060).
6) Re-install the syringe
7) End of procedure.

Assembly Drawings

This section contains Assembly Drawings that are used in building the ELx50 Strip Washer. These documents are subject to change.

DRAWING # DESCRIPTION

4070004-AS Kit Slider Upgrade (Page 1 of 1), page 5-3

4070005-AS Final ASBY Strip Wshr 8 Well (Page 1 of 4), page 5-4

4070507-AS Mechanical ASBY (Page 1 of 3), page 5-9

4070508-AS Carrier ASBY (Page 1 of 1),page 5-14

4070509-AS Lift Motor Cam ASBY (Page 1 of 1), page 5-16

4070510-AS Tubing Set Supply System Assembly (Page 1 of 1), page 5-18

4070511-AS Tubing Set Waste System ASBY (Page 1 of 1), page 5-19

4070513-AS Manifold ASBY 12 Well (Page 1 of 1), page 5-20

4070515-AS Bottle Supply ASBY (Page 1 of 1), page 5-22

4070516-AS Syringe Pump ASBY (Page 1 of 1), page 5-23

4070517-AS Aerosol Cover ASBY (Page 1 of 1), page 5-25

4070518-AS Seal and Cylinder ASBY (Page 1 of 1), page 5-27

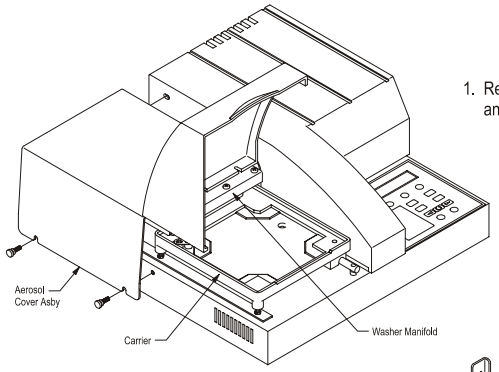
4070522-AS Kit, Supply Tube Valve Opto Assembly (Page 1 of 1), page 5-29

4070524-AS Syringe Pump ASBY Medtec (Page 1 of 1), page 5-30

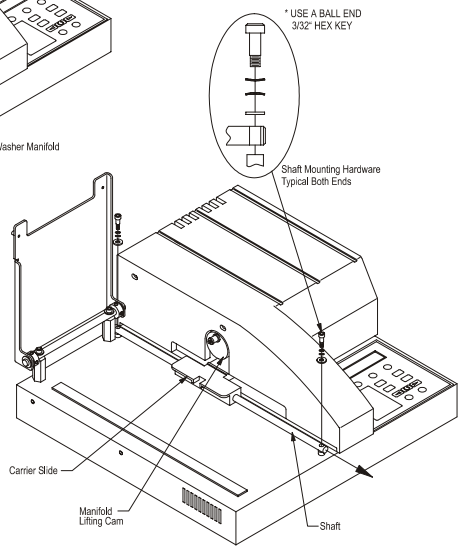
4070527-AS Manifold 16 Well Assembly (Page 1 of 1), page 5-32

ELx50 Slider Upgrade Kit Instructions

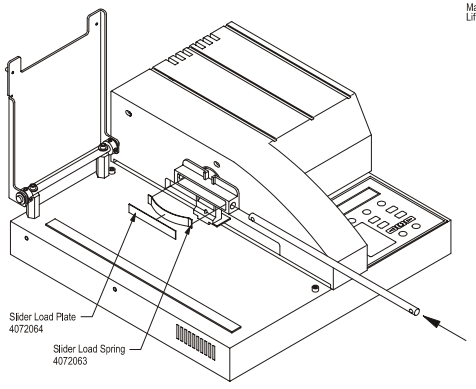
4070004-AS Kit Slider Upgrade (Page 1 of 1)



1. Remove Aerosol Cover Asby, Washer Manifold and Carrier.



2. Push Carrier Slide under Manifold Lifting Cam.
3. Remove Shaft mounting hardware (both ends of Shaft).*
4. Pull Shaft out of Carrier Slide in direction shown.



5. Tilt Carrier Slide up as shown. Do not remove from belt.
6. Insert Slider Load Spring into Carrier Slide.
7. Remove release paper from back of Slider Load Plate and stick adhesive side down to Slider Load Spring (center).
8. Press down on Slider Load Plate and insert Shaft through Carrier Slide.
9. Reinstall Shaft mounting hardware. See mounting hardware detail for orientation of spring washers.
10. Reinstall Carrier, Washer Manifold and Aerosol Cover Asby.
11. Validate function after re-assembly (No alignment required).

4070004, REV A

REV	DESCRIPTION	ECO	DATE	BY
A	RELEASE TO PRODUCTION	30335	2/24/98	BPS

NOTE: USE THIS DRAWING AS MASTER ARTWORK.
PLACE DRAWING ON THE PHOTOCOPIER SUCH THAT THE LEFT HAND HALF IS PHOTOCOPIED ONTO 8½ X 11 20# WHITE BOND PAPER.

UNLESS OTHERWISE SPECIFIED		
ALL COLORS TO BE OPAQUE ALL DIMENSIONS ARE IN INCHES PRODUCTION TOL: .X ±.015 .XX ±.015 .XXX ±.015		
MATERIAL:		
FINISH:		
ADHESIVE:		
DO NOT SCALE	INTERPRET DRAWING IAW Y14.5M-82	THIRD ANGLE PROJECTION

BIO-TEK® INSTRUMENTS, INC.
HIGHLAND PARK, BOX 998
WINOOSKI, VT 05404-0998

PHOTO THIS SIDE	
SIGNATURE	DATE
DRN BY: B.SMITH	1/13/98
ENGR:	

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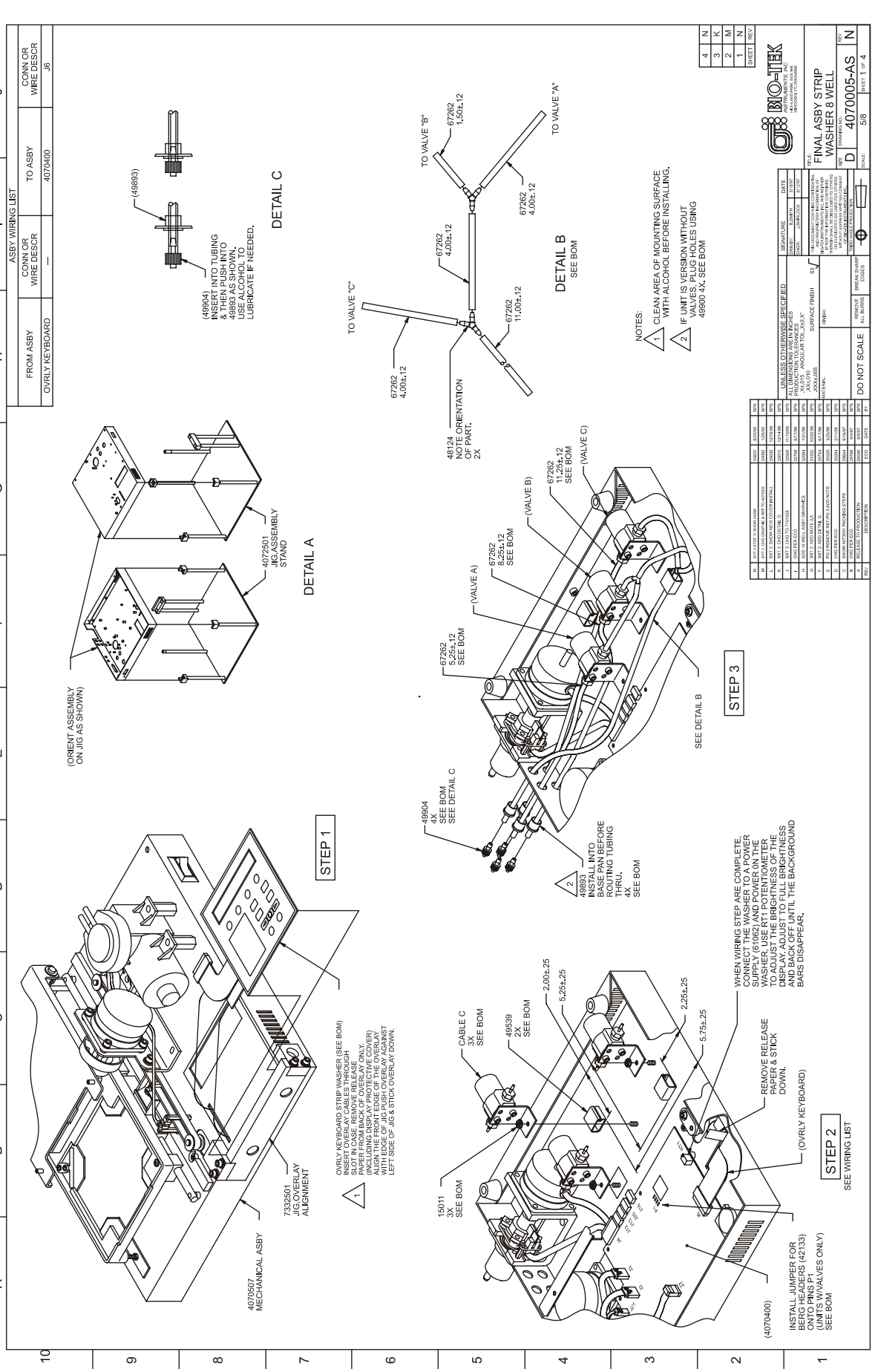
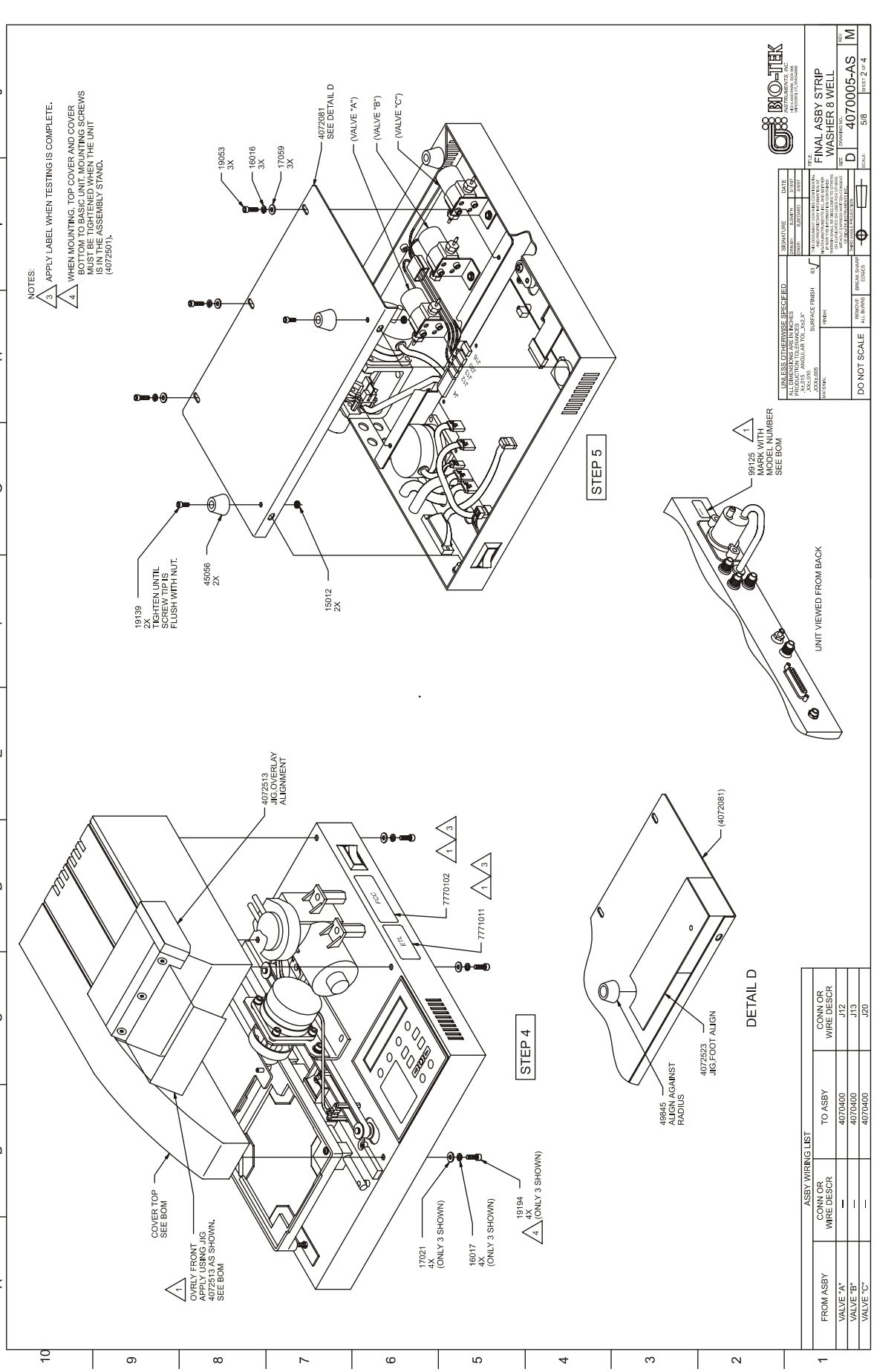
TITLE: KIT, SLIDER UPGRADE

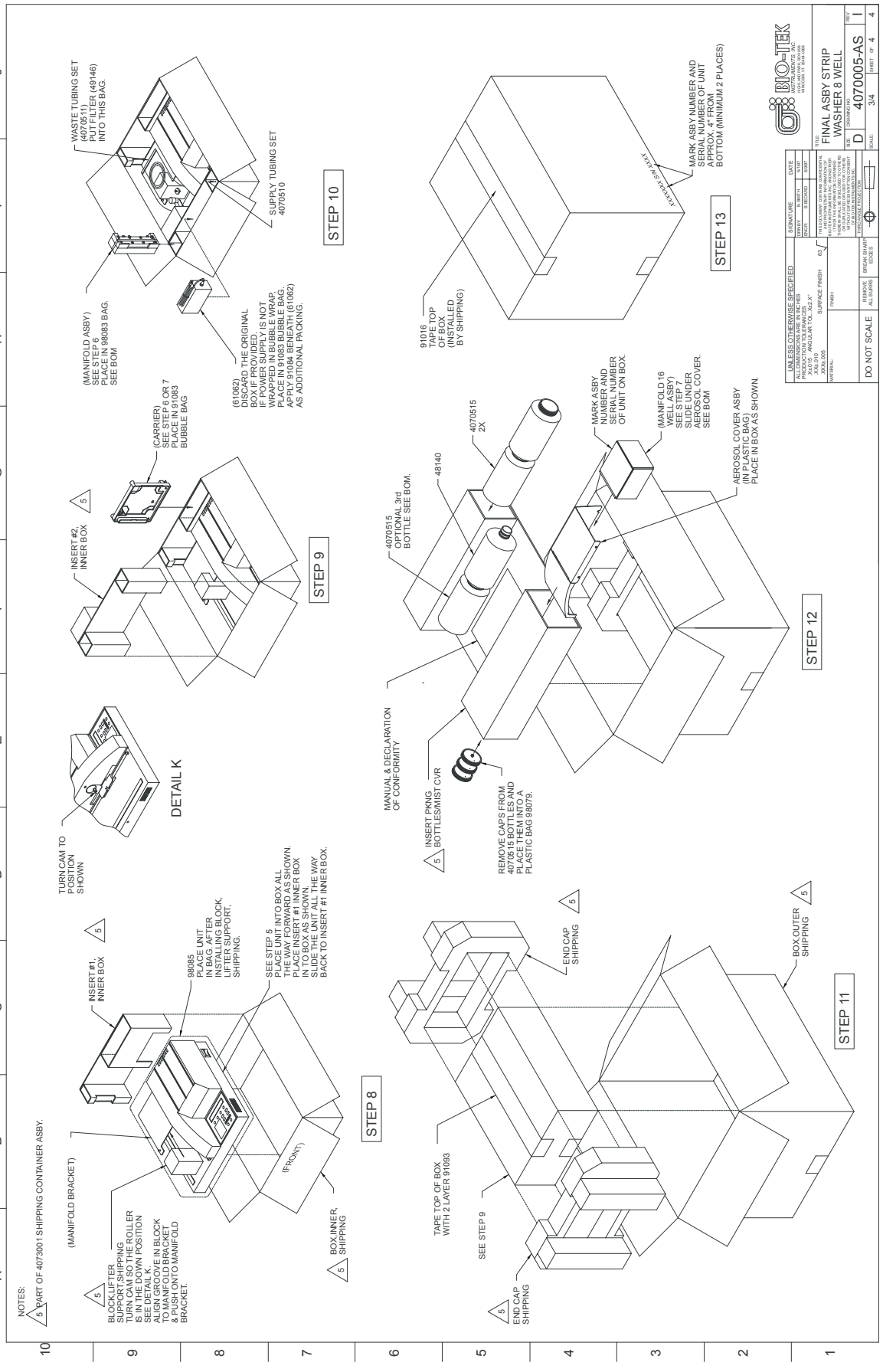
SIZE	DRG NO.	REV
B	4070004-AW	A
SCALE: 1 / 1	SHEET 1 OF 1	



4070005-AS Final ASBY Strip Wshr 8 Well (Page 1 of 4)



4070005-AS Final ASBY Strip Wshr 8 Well (Page 2 of 4)


NOTES:
5 PART OF 4073001 SHIPPING CONTAINER ASBY.
(MANIFOLD BRACKET)
5 BLOCK,LIFTER SUPPORT,SHIPPING TURN CAM SO THE ROLLER IS IN THE DOWN POSITION SEE DETAIL K. ALIGN GROOVE IN BLOCK TO MANIFOLD BRACKET & PUSH ONTO MANIFOLD BRACKET.
INSERT #1, INNER BOX
5
98085 PULL UNIT IN BAG, AFTER INSTALLING BLOCK, LIFTER SUPPORT, SHIPPING.
SEE STEP 5 PLACE UNIT INTO BOX ALL THE WAY FORWARD AS SHOWN. PLACE INSERT #1 INNER BOX IN TO BOX AS SHOWN. SLIDE THE UNIT ALL THE WAY BACK TO INSERT #1 INNER BOX.
(FRONT)
5 BOX,INNER, SHIPPING
STEP 8
TURN CAM TO POSITION SHOWN
DETAIL K
INSERT #2, INNER BOX
5
(CARRIER) SEE STEP 6 OR 7 PLACE IN 91083 BUBBLE BAG
STEP 9
(MANIFOLD ASBY) SEE STEP 8 PLACE IN 98083 BAG. SEE BOM
WASTE TUBING SET 4070511 FILTER (49146) INTO THIS BAG.
SUPPLY TUBING SET 4070510
(61062) DISCARD THE ORIGINAL DESICCANT PACK IF POWER SUPPLY IS NOT WRAPPED IN BUBBLE WRAP. PLACE IN 91083 BUBBLE BAG. APPLY 91084 BENEATH (61062) AS ADDITIONAL PACKING.
STEP 10
4070515 OPTIONAL 3rd BOTTLE SEE BOM.
48140
4070515 2X
MANUAL & DECLARATION OF CONFORMITY
5 INSERT PKNG BOTTLES/MIST CVR
REMOVE CAPS FROM 4070515 BOTTLES AND PLACE THEM INTO A PLASTIC BAG 98079.
MARK ASBY NUMBER AND SERIAL NUMBER OF UNIT ON BOX.
(MANIFOLD 16 WELL ASBY) SEE STEP 7 SLIDE UNDER AEROSOL COVER. SEE BOM
AEROSOL COVER ASBY (IN PLASTIC BAG) PLACE IN BOX AS SHOWN.
STEP 12
91016 TAPE TOP OF BOX (INSTALLED BY SHIPPING)
MARK ASBY NUMBER AND SERIAL NUMBER OF UNIT APPROX. 4" FROM BOTTOM (MINIMUM 2 PLACES)
STEP 13
TAPE TOP OF BOX WITH 2 LAYER 91093
SEE STEP 9
5 END CAP SHIPPING
END CAP SHIPPING
5
5 BOX,OUTER SHIPPING
STEP 11
DO NOT SCALE
REMOVE ALL BURRS
BREAK SHARP EDGES
SIGNATURE DATE
DRAWN B. SMITH 6/9/97
TRACED B.BLOOMO 6/9/97
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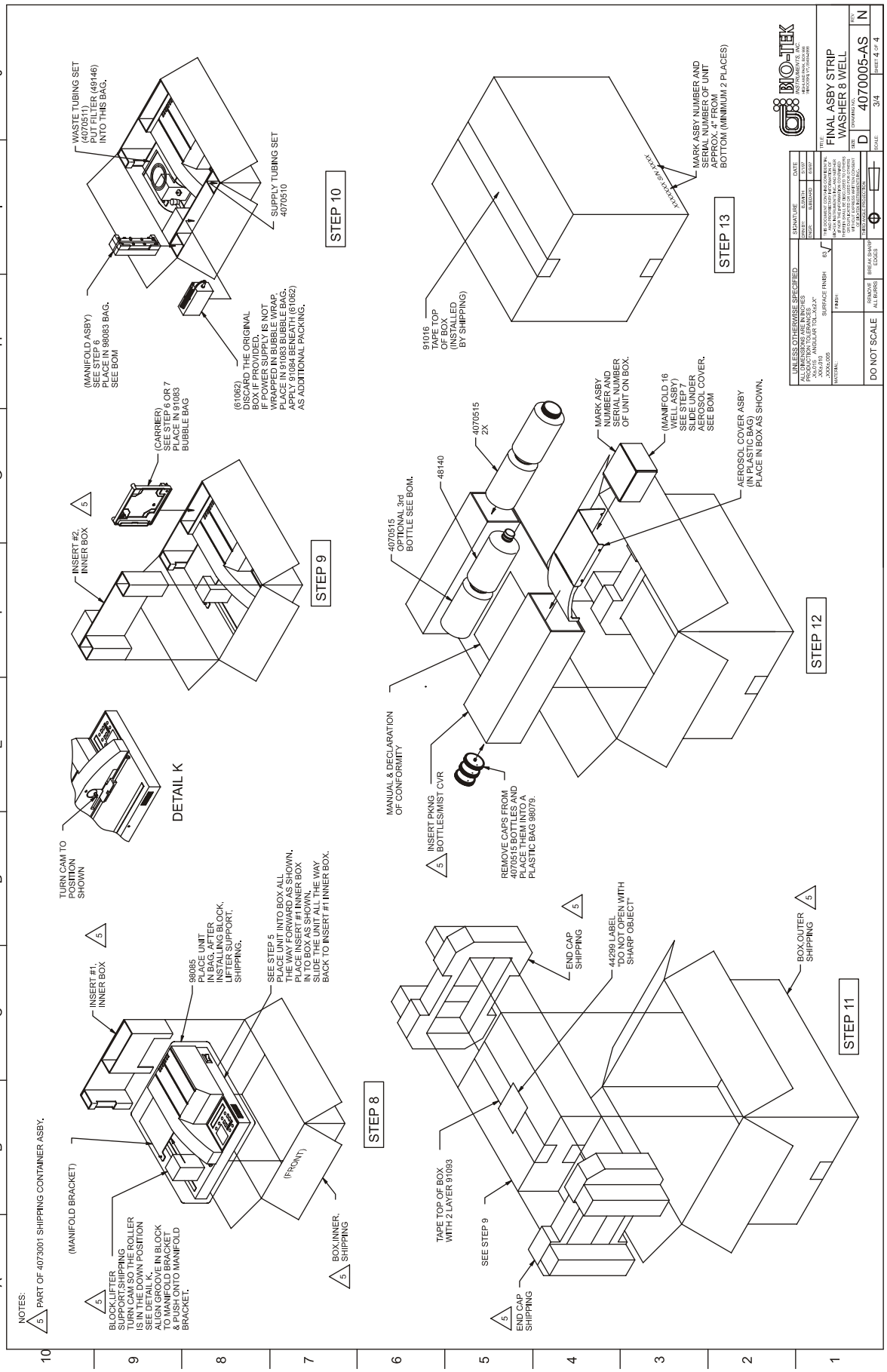
SURFACE FINISH 63
FINISH
MATERIAL
LINEAR DIMENSIONS ARE SPECIFIED IN INCHES
ALL DIMENSIONS ARE AFTER PROCESS
TOLERANCES ANGULAR: ± 2°
XX ± .010
XXX ± .005
BIO-TEK INSTRUMENTS, INC. WINOOSKI, VT 05404-0998
TITLE: FINAL ASBY STRIP WASHER 8 WELL
SIZE D
DRAWING NO. 4070005-AS
REV I
SCALE: 3/4
SHEET OF 4
4

4070005-AS Final ASBY Strip Wshr 8 Well (Page 3 of 4)


NOTES:
5 PART OF 4073001 SHIPPING CONTAINER ASBY.
(MANIFOLD BRACKET)
5 BLOCK-LIFTER SHIPPING
TURN CAM SO THE ROLLER IS IN THE DOWN POSITION
SEE DETAIL K.
ALIGN GROOVE IN BLOCK TO MANIFOLD BRACKET & PUSH ONTO MANIFOLD BRACKET.
INSERT #1, INNER BOX
5
98085 PLACE UNIT IN BAG, AFTER INSTALLING BLOCK, LIFTER SUPPORT, SHIPPING.
SEE STEP 5
PLACE UNIT INTO BOX ALL THE WAY FORWARD AS SHOWN.
PLACE INSERT #1 INNER BOX IN TO BOX AS SHOWN.
SLIDE THE UNIT ALL THE WAY BACK TO INSERT #1 INNER BOX.
(FRONT)
5 BOX, INNER, SHIPPING
STEP 8
TURN CAM TO POSITION SHOWN
DETAIL K
INSERT #2, INNER BOX
5
(CARRIER) SEE STEP 6 OR 7 PLACE IN 91083 BUBBLE BAG
(MANIFOLD ASBY) SEE STEP 6 PLACE IN 98083 BAG. SEE BOM
WASTE TUBING SET (4070511) PUT FILTER (49146) INTO THIS BAG.
SUPPLY TUBING SET 4070510
(61062) DISCARD THE ORIGINAL BOX IF PROVIDED. IF POWER SUPPLY IS NOT WRAPPED IN BUBBLE WRAP, PLACE IN 91083 BUBBLE BAG. APPLY 91084 BENEATH (61062) AS ADDITIONAL PACKING.
STEP 9
4070515 OPTIONAL 3rd BOTTLE SEE BOM.
48140
4070515 2X
MANUAL & DECLARATION OF CONFORMITY
5 INSERT PKNG BOTTLES/MIST CVR
REMOVE CAPS FROM 4070515 BOTTLES AND PLACE ITEM INTO A PLASTIC BAG 98079.
MARK ASBY NUMBER AND SERIAL NUMBER OF UNIT ON BOX.
(MANIFOLD 16 WELL ASBY) SEE STEP 7 AEROSOL UNDER AEROSOL COVER. SEE BOM
AEROSOL COVER ASBY (IN PLASTIC BAG) PLACE IN BOX AS SHOWN.
STEP 12
91016 TAPE TOP OF BOX (INSTALLED BY SHIPPING)
MARK ASBY NUMBER AND SERIAL NUMBER OF UNIT APPROX. 4" FROM BOTTOM (MINIMUM 2 PLACES)
STEP 13
TAPE TOP OF BOX WITH 2 LAYER 91093
SEE STEP 9
5 END CAP SHIPPING
END CAP SHIPPING
5
44299 LABEL "DO NOT OPEN WITH SHARP OBJECT"
BOX OUTER SHIPPING
5
STEP 11
UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES
TOLERANCES: FRACTIONAL ± 1/32
.XX±.015 ANGULAR: TOL=.X±2.X°
.XXX±.005
SURFACE FINISH
MATERIAL
FINISH
DO NOT SCALE
REMOVE ALL BURRS
BREAK SHARP EDGES
SIGNATURE
DRAWN 6/30/11
ENGR. 6/30/2011
DATE
5/107
6/307
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PROPRIETARY AND CONFIDENTIAL
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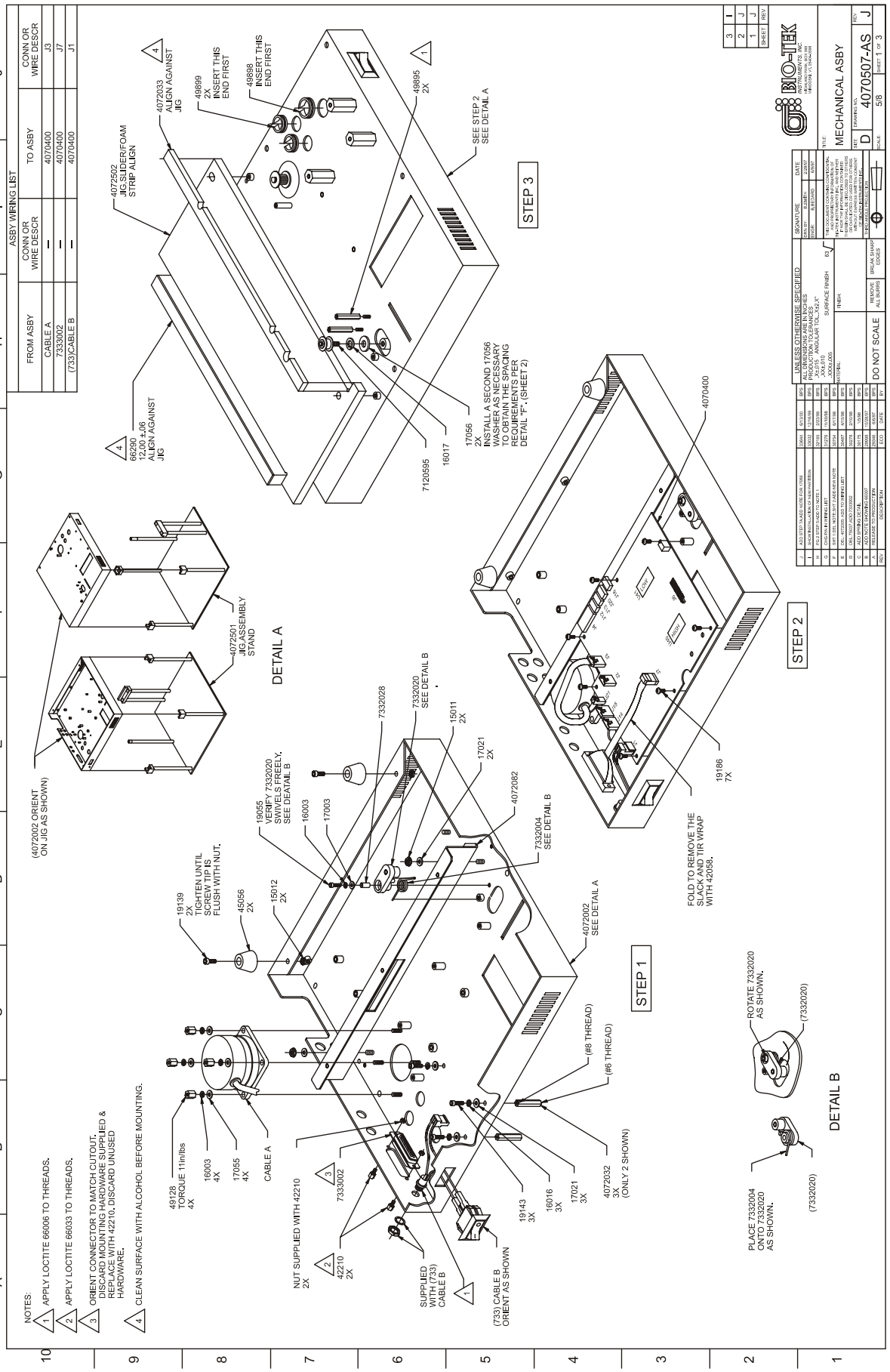
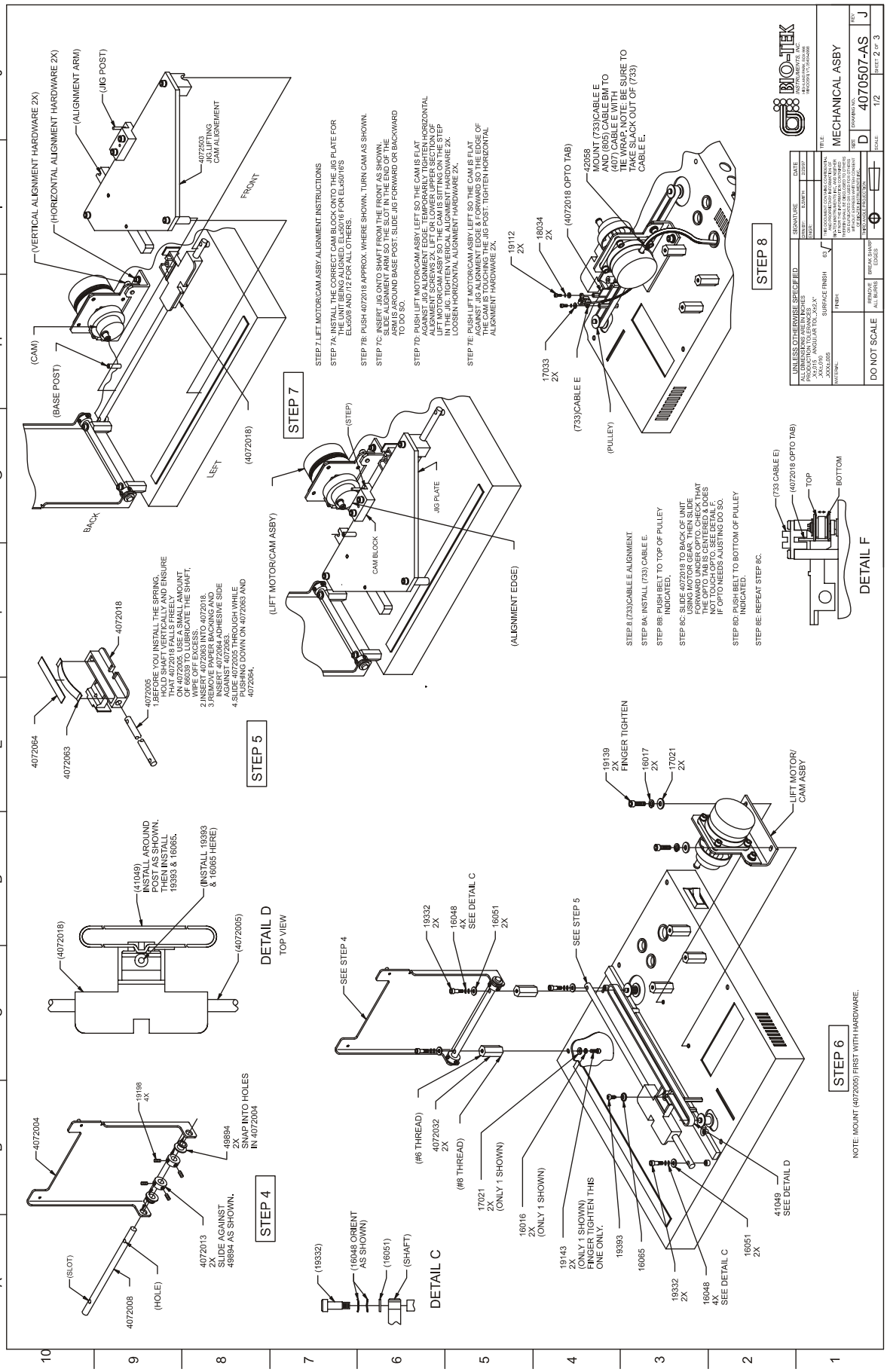
MO-SCI SPECIALTY PRODUCTS, LLC
ROCKMART, GEORGIA
TITLE
FINAL ASBY STRIP WASHER 8 WELL
SIZE D
DRAWING NO. 4070005-AS
REV N
SCALE 3/4
SHEET 4 OF 4

4070005-AS Final ASBY Strip Wshr 8 Well (Page 4 of 4)

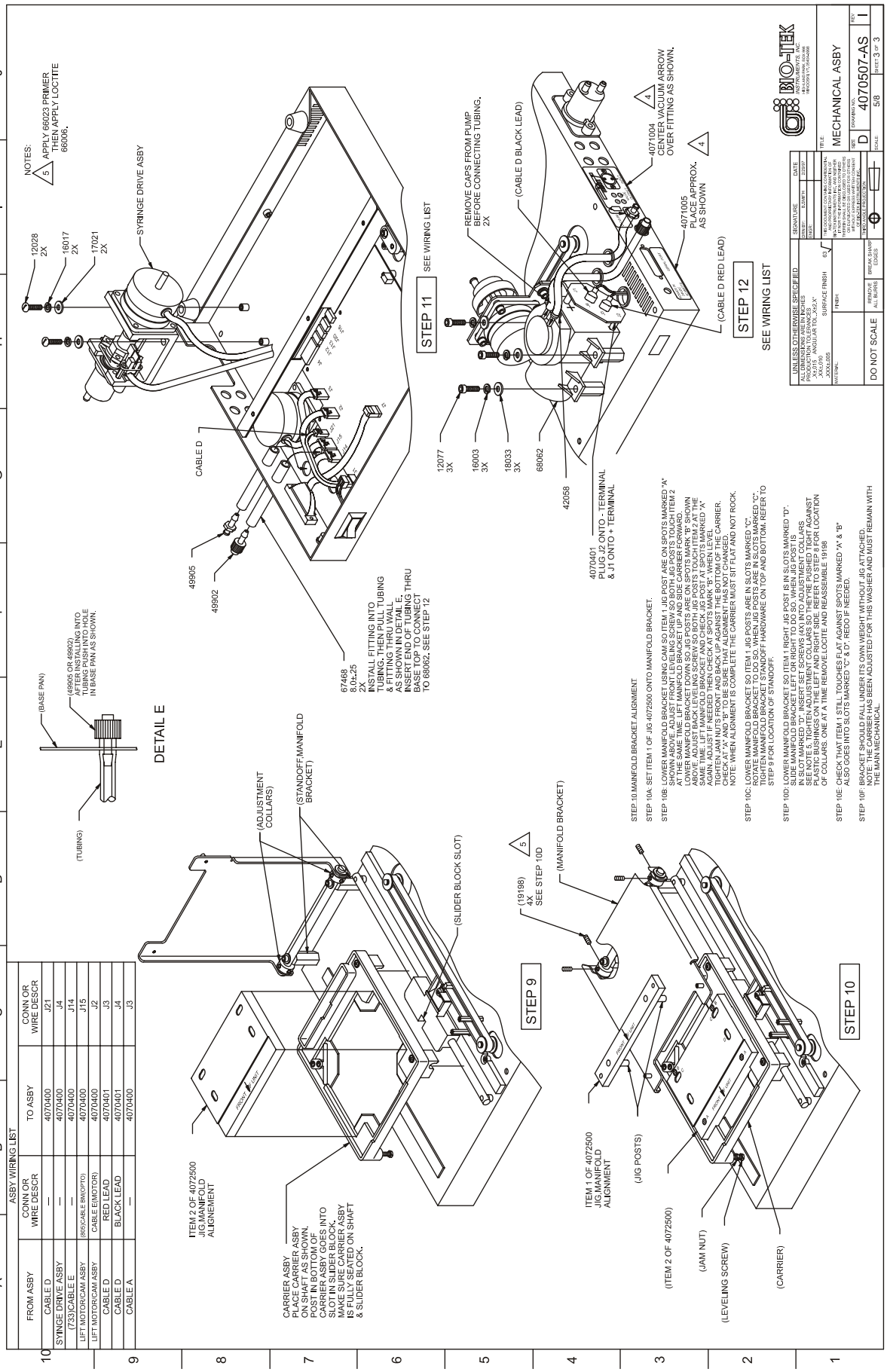
4070003 Kit, Generic Hardware Final Assembly rev J As of 11-20-00				
Item	Description	Rev	Qty	Remarks
15012	NUT KEPS 10-32	B	2	
16016	LKWSHR #8 HELICAL SPR SS	A	3	
16017	LKWSHR #10 HELICAL SPR SS	A	4	
17021	WSHR FL .20IDX.44OD,1/16TK SS	E	4	
17059	WSHR FL .188IDX.375ODX.049 SS	B	3	
19053	SCR SOCK CAP 8-32X5/16 BK	A	3	
19139	SCR SOCK CAP #10-32X5/8" SS	A	2	
19194	SCR SOCK CAP 10-32X3/8" SS	B	4	
4070507	MECHANICAL ASBY	K	1	
4072081	COVER BOTTOM BASE	A	1	
4072500	JIG MANIFOLD ALIGNMENT	D	0	TOOL ONLY
4072501	JIG ASSEMBLY STAND	A	0	TOOL ONLY
4072505	JIG MAINIFOLD CALIBRATION	C	0	TOOL ONLY
4072513	JIG OVERLAY ALIGNMENT	A	0	TOOL ONLY
4072518	TOOL STOPPER 3 HOLE WASTE BTL	A	0	TOOL ONLY
4072519	TOOL INLET DISTRIBUTION LINE	A	0	TOOL ONLY
4072523	JIG FOOT ALIGN	A	0	TOOL ONLY
45056	FOOT,RUBR 1.062ODX27/32H3/16ID	A	2	
49845	RUBBER FOOT .81" DIA,GREY,PSA	B	1	
49918	TUBING CLIP 1/4DIA SELF ADHESV	A	1	
7342500	JIG MICROPLATE STOP ALIGN	E	0	TOOL ONLY
8290206	SFTWR DOWNLOAD UTIL V1.42	H	0	TOOL ONLY
91093	LABEL 4"X72YDS CLEAR TAPE	A	0	A/R



4070507-AS Mechanical ASBY (Page 1 of 3)



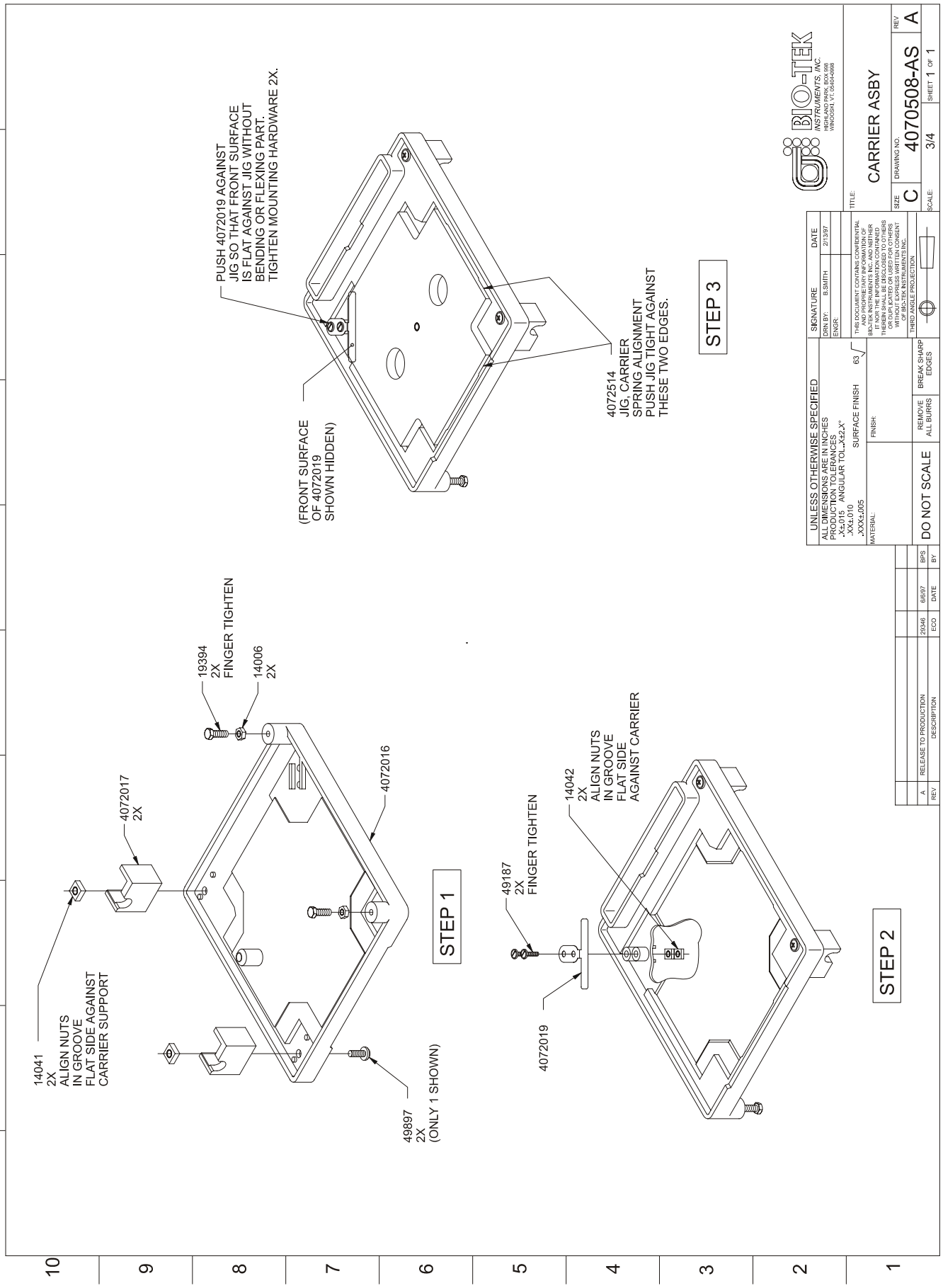
4070507-AS Mechanical ASBY (Page 2 of 3)


ASBY WIRING LIST
FROM ASBY | CONN OR WIRE DESCR | TO ASBY | CONN OR WIRE DESCR
CABLE D | — | 4070400 | J21
SYRINGE DRIVE ASBY | — | 4070400 | J4
(733)CABLE E | — | 4070400 | J14
LIFT MOTOR/CAM ASBY | (935)CABLE B/M(OPTO) | 4070400 | J15
LIFT MOTOR/CAM ASBY | CABLE E(MOTOR) | 4070400 | J2
CABLE D | RED LEAD | 4070401 | J3
CABLE D | BLACK LEAD | 4070401 | J4
CABLE A | — | 4070400 | J3
NOTES:
5 APPLY 66023 PRIMER THEN APPLY LOCTITE 68006.
12028 2X
16017 2X
17021 2X
SYRINGE DRIVE ASBY
CABLE D
49905
49902
67468 6-32x.25 2X
INSTALL FITTING INTO TUBING, THEN PULL TUBING & FITTING THRU WALL AS SHOWN IN DETAIL E, INSERT END OF TUBING THRU BASE PAN TO CONNECT TO 68062, SEE STEP 12
STEP 11
SEE WIRING LIST
REMOVE CAPS FROM PUMP BEFORE CONNECTING TUBING. 2X
(CABLE D BLACK LEAD)
4071004 CENTER VACUUM ARROW OVER FITTING AS SHOWN.
4071005 PLACE APPROX. AS SHOWN
(CABLE D RED LEAD)
STEP 12
SEE WIRING LIST
12077 3X
16003 3X
18033 3X
68062
42058
4070401 PLUG J2 ONTO - TERMINAL & J1 ONTO + TERMINAL
DETAIL E
(BASE PAN)
(49905 OR 49902) AFTER INSTALLING INTO TUBING PUSH INTO HOLE IN BASE PAN AS SHOWN.
(TUBING)
(ADJUSTMENT COLLARS)
(STANDOFF,MANIFOLD BRACKET)
(SLIDER BLOCK SLOT)
(19198) 4X SEE STEP 10D
(MANIFOLD BRACKET)
STEP 9
STEP 10
ITEM 2 OF 4072500 JIG,MANIFOLD ALIGNMENT
CARRIER ASBY PLACE CARRIER ASBY ON SHAFT AS SHOWN. POST IN BOTTOM OF CARRIER ASBY GOES INTO SLOT IN SLIDER BLOCK. MAKE SURE CARRIER ASBY IS FULLY SEATED ON SHAFT & SLIDER BLOCK.
ITEM 1 OF 4072500 JIG,MANIFOLD ALIGNMENT
(JIG POSTS)
(ITEM 2 OF 4072500)
(JAM NUT)
(LEVELING SCREW)
(CARRIER)
STEP 10A SET ITEM 1 OF JIG 4072500 ONTO MANIFOLD BRACKET.
STEP 10B LOWER MANIFOLD BRACKET USING CAM SO ITEM 1 JIG POST ARE ON SPOTS MARKED "A" SHOWN ABOVE, ADJUST FRONT LEVELING SCREW SO BOTH JIG POSTS TOUCH ITEM 2 AT THE SAME TIME. ADJUST BACK LEVELING SCREW SO BOTH JIG POSTS TOUCH ITEM 2 AT THE LOWER MANIFOLD BRACKET DOWN SO JIG POSTS ARE ON SPOTS MARK "B" SHOWN ABOVE, ADJUST BACK LEVELING SCREW SO BOTH JIG POSTS TOUCH ITEM 2 AT THE SAME TIME. REPEAT STEP 10A AND 10B UNTIL JIG POSTS TOUCH ITEM 2 AT SPOTS MARKED "A" AGAIN. ADJUST IF NEEDED THEN CHECK AT SPOTS MARK "B" WHEN LEVEL TIGHTEN JAM NUTS FRONT AND BACK UP AGAINST THE BOTTOM OF THE CARRIER. CHECK AT "A" AND "B" TO BE SURE THAT ALIGNMENT HAS NOT CHANGED. NOTE: WHEN ALIGNMENT IS COMPLETE THE CARRIER MUST SIT FLAT AND NOT ROCK.
STEP 10C LOWER MANIFOLD BRACKET SO ITEM 1 JIG POSTS ARE IN SLOTS MARKED "C". ROTATE MANIFOLD BRACKET TO SO JIG POSTS ARE IN SLOTS MARKED "C". TIGHTEN MANIFOLD BRACKET STANDOFF HARDWARE ON TOP AND BOTTOM. REFER TO STEP 9 FOR LOCATION OF STANDOFF.
STEP 10D LOWER MANIFOLD BRACKET SO ITEM 1 RIGHT JIG POST IS IN SLOTS MARKED "D". SLIDE MANIFOLD BRACKET LEFT OR RIGHT TO DO SO. WHEN JIG POST IS IN SLOT MARKED "D" INSERT SET SCREWS (4X) INTO ADJUSTMENT COLLARS SEE NOTE IS TIGHTEN ADJUSTMENT COLLARS SO THEY ARE PUSHED TIGHT AGAINST THE SLIDER BLOCK AND MANIFOLD BRACKET. REMOVE ITEM 1 FROM LOCATION OF COLLARS. ONE AT A TIME REMOVE,LOCITE AND REASSEMBLE 19198
STEP 10E CHECK THAT ITEM 1 STILL TOUCHES FLAT AGAINST SPOTS MARKED "A" & "B" ALSO GOES INTO SLOTS MARKED "C" & "D". REDO IF NEEDED
STEP 10F BRACKET SHOULD FALL UNDER ITS OWN WEIGHT WITHOUT JIG ATTACHED. NOTE: IF CARRIER HAS BEEN ADJUSTED FOR THIS WASHER AND MUST REMAIN WITH THE MAIN MECHANICAL
UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES
PROJECTION TOLERANCES
.XX±.010
.XXX±.005
MATERIAL
FINISH
SURFACE FINISH 63
DO NOT SCALE
REMOVE ALL BURRS
BREAK SHARP EDGES
SIGNATURE
DRAWN
CHECKED
DATE
MATERIAL
FINISH
SURFACE FINISH
NEXT ASSY
PROPRIETARY AND CONFIDENTIAL
SIZE D
DRAWING NO. 4070507-AS
REV 1
SCALE 5/8
SHEET 3 OF 3
TITLE: MECHANICAL ASBY
MO-TEK

4070507-AS Mechanical ASBY (Page 3 of 3)

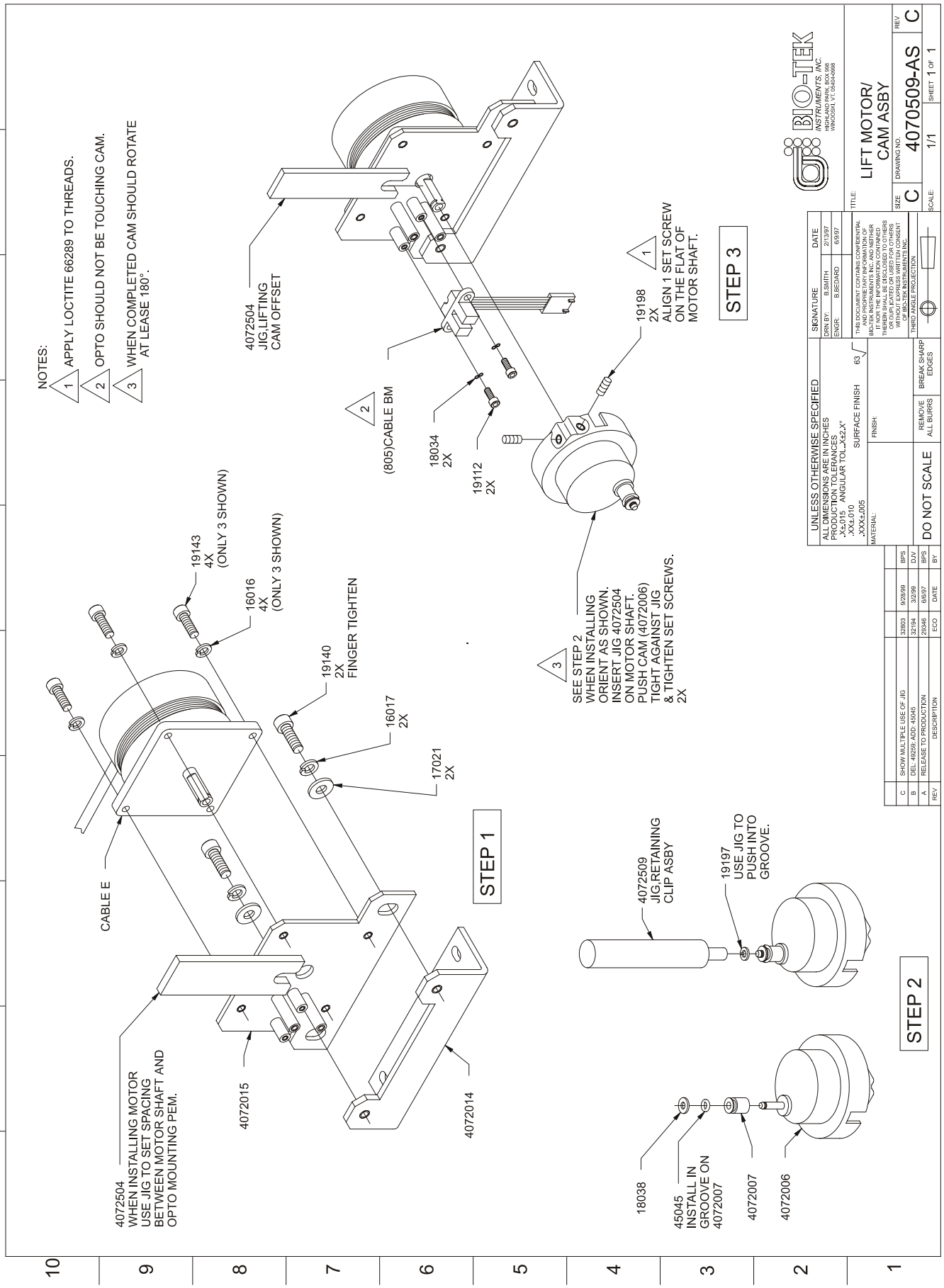
4070507 Mechanical Assembly rev K As of 11-20-00				
Item	Description	Rev	Qty	Remarks
12028	SCR PAN 10-32X3/8 SS SLOT	A	2	
12077	SCR SOCK CAP 6-32X1/2 SST	A	3	
15011	NUT KEPS 8-32	B	2	
15012	NUT KEPS 10-32	B	2	
16003	LKWSHR #6 HELICAL SPR SS	A	8	
16016	LKWSHR #8 HELICAL SPR SS	A	5	
16017	LKWSHR #10 HELICAL SPR SS	A	5	
16048	WSHR CURVED .203ID .322OD SS	A	8	
16051	WSHR FL,.194IDX.312ODX.04T SS	B	4	
16065	WSHR CENTERING	A	1	
17003	WSHR FL .156IDX.312OD	B	1	
17021	WSHR FL .20IDX.44OD,1/16TK SS	E	11	
17033	WSHR FLAT #4 .125X.250 SS	B	2	
17055	WSHR FL .156IDX.375ODX.049 SS	B	4	
17056	WSHR FL .219IDX.438ODX.049 SS	C	2	
17059	WSHR FL .188IDX.375ODX.049 SS	B	5	
18033	WSHR #6 FENDER SS	B	3	
18034	WSHR SPRING WAVE #4 SS	B	2	
19055	SCR SOCK CAP 6-32X5/8 BLK	A	1	
19112	SCR SOCK CAP 4-40X3/8 SS	B	2	
19139	SCR SOCK CAP #10-32X5/8" SS	A	4	
19143	SCR SOCK CAP#8-32X1/2 SS	A	5	
19186	SEMS 6-32X1/4 ST PHIL ITOOTH	A	7	
19198	SCR SET 8-32X3/16 CUPPT SS	B	4	
19332	SCR SHLDR 6-32X.187ODX.375 SS	A	4	
19393	SCR 8-32X.375 ROLOK PHH THDFRM	A	1	
4070400	MAIN PCB ASBY	E	1	
4070401	PCB FILTERS ASBY	A	1	
4070500	CABLE MOTOR CARRIER ASBY	B	1	CABLE A
4070505	CABLE VACUUM PUMP POWER ASBY	B	1	CABLE D
4070507-AS	-MECHANICAL ASBY	J	0	DOCUMENT ONLY
4070508	CARRIER ASBY	A	1	
4070509	LIFT MOTOR/CAM ASBY	B	1	
4070516	SYRINGE PUMP ASBY	B	1	
4071004	LABEL REAR	A	1	
4071005	LABEL POWER IN/SERIAL	A	1	
4072002	BASE PAN	E	1	
4072004	MOUNTING BRACKET MANIFOLD	D	1	
4072005	SHAFT MICROPLATE CARRIER	F	1	
4072008	SHAFT PIVOT	E	1	
4072013	COLLAR WASHER SHAFT	B	2	
4072018	SLIDER MOLDED	B	1	
4072032	STANDOFF MANIFOLD BRACKET	F	5	
4072033	STRIP FOAM	A	1	
4072063	SLIDER LOAD SPRING	A	1	
4072064	SLIDER LOAD PLATE	A	1	
4072082	PARTITION BASE	A	1	
4072500	JIG MANIFOLD ALIGNMENT	D	0	TOOL ONLY
4072501	JIG ASSEMBLY STAND	A	0	TOOL ONLY
4072502	JIG TEFLON/FOAM STRIP ALIGN	B	0	TOOL ONLY
4072503	JIG LIFTING CAM ALIGNMENT	B	0	TOOL ONLY
41049	BELT TIMING 260T 1/4W D	B	1	
42058	TIE WRAP 3"	A	3	
42210	SCREWLOCK FM/25P SUB D	A	1	
45056	FOOT,RUBR 1.062ODX27/32H3/16ID	A	2	

Item	Description	Rev	Qty	Remarks
49128	SPCR FF 6-32X.25L HEXAL	B	4	
49894	BEARING SNAPIN .312ID TEP642 W	A	2	
49895	STDOFF FF 4-40 1.125L AL HEX	B	2	
49898	GROMMET SPLIT PLASTIC .625 ID	B	1	
49899	GROMMET SPLIT PLASTIC .500 ID	B	2	
49902	FTG M LUER X 1/4 BARB PP	A	1	
49905	FTG F LUER X 1/4 BARB PP	A	1	
66006	LOCTITE 242 BLUE	A	0	A/R
66023	LOCTITE PRIMER 'T'	B	0	A/R
66039	GREASE, LINEAR WAY	A	0	
66290	TAPE UHMW .030X.5 ADHES BACK	A	1	
67468	TUBING SILICON 3/16ID X 3/8OD	A	1.33	8" (2X)
68062	COMPRESSOR DIAPH 24VDC	B	1	
7120595	IDLER PULLEY ASBY	B	1	
7330503	CABLE POWER INPUT ASBY	F	1	733 CABLE B
7330506	CABLE OPTO 14L ASBY	C	1	733 CABLE E
7332004	SPRING TORSION	B	1	
7332020	ARM BELT TENSION	B	1	
7332028	SPACER TENSION ARM	C	1	
7333002	CABLE ASBY RS232 INTFC 486CPU	B	1	



4070508-AS Carrier ASBY (Page 1 of 1)

4070508 Carrier Assembly rev A As of 11-20-00				
Item	Description	Rev	Qty	Remarks
14006	NUT HEX 10-32 SS	A	2	
14041	NUT SQUARE 8-32 SS	A	2	
14042	NUT SQUARE 6-32 SS	A	2	
19394	SCR 10-32X.50 NYLON HEX HEAD	A	2	
4070508-AS	-CARRIER ASBY	A	0	DOCUMENT ONLY
4072016	CARRIER MOLDED	C	1	
4072017	SUPPORT CARRIER	B	2	
4072019	SPRING MICROPLATE	C	1	
49187	FSTNR,BLACK,6-32X1/2	B	2	
49897	FSTNR BLACK 8-32X1/2	A	2	


NOTES:
1 APPLY LOCTITE 66289 TO THREADS.
2 OPTO SHOULD NOT BE TOUCHING CAM.
3 WHEN COMPLETED CAM SHOULD ROTATE AT LEASE 180°.
4072504 JIG,LIFTING CAM OFFSET
(805)CABLE BM
18034 2X
19112 2X
19198 2X ALIGN 1 SET SCREW ON THE FLAT OF MOTOR SHAFT.
SEE STEP 2 WHEN INSTALLING ORIENT AS SHOWN. INSERT JIG 4072504 ON MOTOR SHAFT. PUSH CAM (4072006) TIGHT AGAINST JIG & TIGHTEN SET SCREWS. 2X
STEP 3
19143 4X (ONLY 3 SHOWN)
16016 4X (ONLY 3 SHOWN)
19140 2X FINGER TIGHTEN
16017 2X
17021 2X
CABLE E
4072504 WHEN INSTALLING MOTOR USE JIG TO SET SPACING BETWEEN MOTOR SHAFT AND OPTO MOUNTING PEM.
4072015
4072014
STEP 1
4072509 JIG,RETAINING CLIP ASBY
19197 USE JIG TO PUSH INTO GROOVE.
18038
45045 INSTALL IN GROOVE ON 4072007
4072007
4072006
STEP 2
UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES
PRODUCTION TOLERANCES
.X±.015 ANGULAR TOL..X±2.X°
.XX±.010
.XXX±.005
MATERIAL:
FINISH:
SURFACE FINISH 63
SIGNATURE DATE
DRN BY: R.SMITH 2/13/97
ENGR: B.BEDARD 6/6/97
DO NOT SCALE
REMOVE ALL BURRS
BREAK SHARP EDGES
THIRD ANGLE PROJECTION
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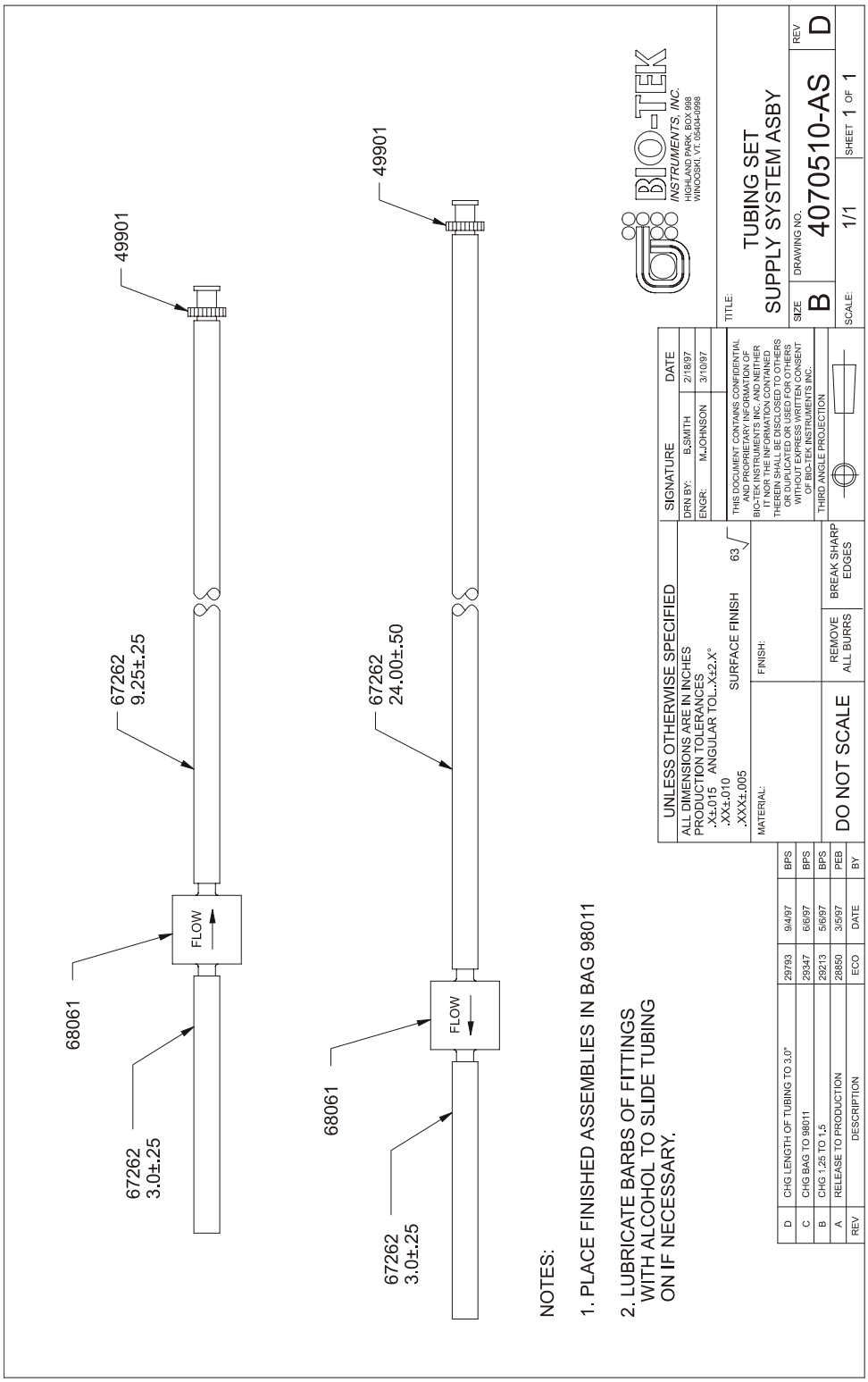
C SHOW MULTIPLE USE OF JIG 32803 9/28/99 BPS
B DEL 46259; ADD 45045 32194 3/2/99 DJV
A RELEASE TO PRODUCTION 20346 6/6/97 BPS
REV DESCRIPTION ECO DATE BY
BIO-TEK INSTRUMENTS, INC.
HIGHLAND PARK, P.O. BOX 998
WINOOSKI, VT. 05404-0998
TITLE: LIFT MOTOR/ CAM ASBY
SIZE: C
DRAWING NO. 4070509-AS
REV. C
SCALE: 1/1
SHEET 1 OF 1

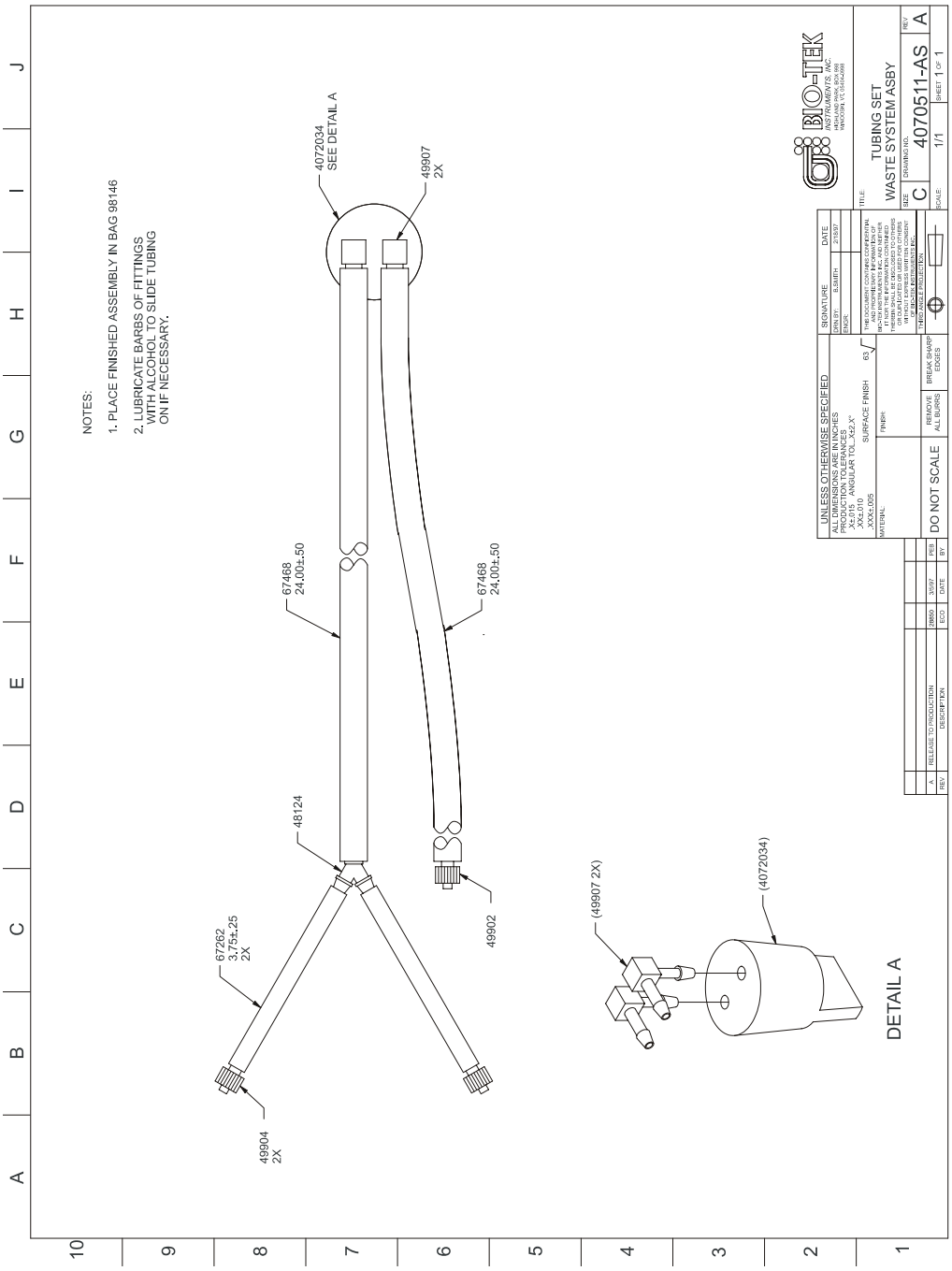
4070509-AS Lift Motor Cam ASBY (Page 1 of 1)

4070509 Lift Motor/Cam Assembly rev B As of 11-20-00				
Item	Description	Rev	Qty	Remarks
16016	LKWSHR #8 HELICAL SPR SS	A	4	
16017	LKWSHR #10 HELICAL SPR SS	A	2	
17021	WSHR FL .20IDX.44OD,1/16TK SS	E	2	
18034	WSHR SPRING WAVE #4 SS	B	2	
18038	WSHR .130IDX.250ODX.020T NYLON	A	1	
19112	SCR SOCK CAP 4-40X3/8 SS	B	2	
19140	SCR SOCK CAP #10-32X1/2" SS	A	2	
19143	SCR SOCK CAP#8-32X1/2 SS	A	4	
19197	RING RETAINING 1/8 SHAFT SS	A	1	
19198	SCR SET 8-32X3/16 CUPPT SS	B	2	
4070501	CABLE MOTOR LIFT ASBY	B	1	CABLE E
4070509-AS	-LIFT MOTOR/CAM ASBY	C	0	DOCUMENT ONLY
4072006	CAM LIFTING	D	1	
4072007	ROLLER CAM	A	1	
4072014	BRACKET MOTOR MOUNTING	C	1	
4072015	MOUNT MOTOR	B	1	
4072504	JIG LIFTING CAM OFFSET	B	0	TOOL ONLY
4072509	JIG RETAINING CLIP ASBY	C	0	TOOL ONLY
45045	O-RNG 3/16ID X 5/16OD VITON	B	1	
66289	LOCTITE 454 GEL 20GRAM	A	0	A/R
8050546	CABLE OPTO ASBY	D	1	CABLE BM



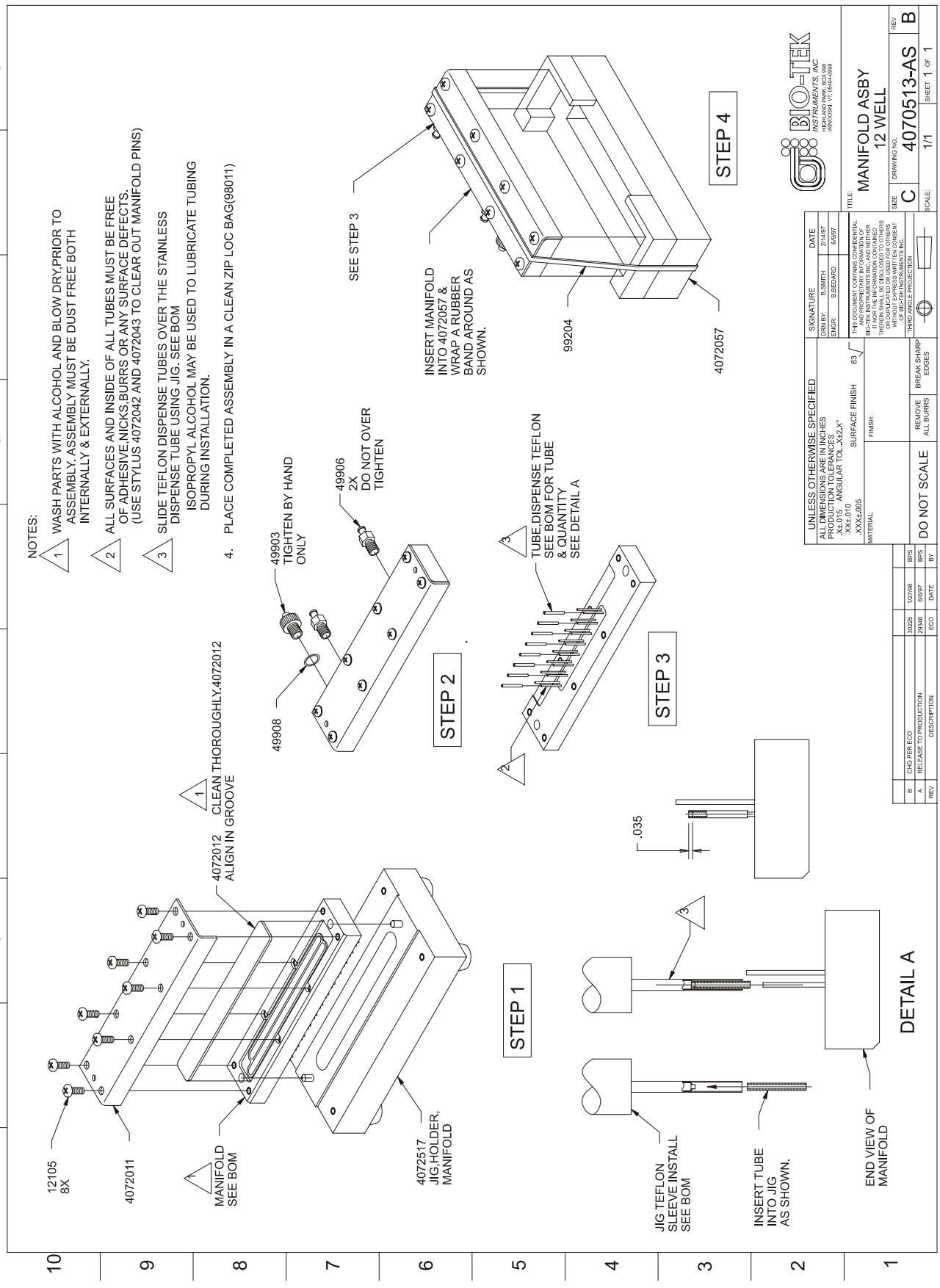
4070510-AS Tubing Set Supply System Assembly (Page 1 of 1)

4070510 Tubing Set Supply System Assembly rev D As of 11-20-00				
Item	Description	Rev	Qty	Remarks
4070510-AS	-TUBING SET SUPPLY SYSTEM ASBY	D	0	DOCUMENT ONLY
49901	FTG F LUER X 5/32 BARB PP	A	2	
67262	TUBING,SILICON,1/8 ID X 1/4 OD	B	3.27	3"(2X), 9.25", 24"
68061	VALVE CHK 3/16 BARBS PP V 2.1#	A	2	
98011	BAG ZIP-LOCK SMALL	A	0	



4070511-AS Tubing Set Waste System ASBY (Page 1 of 1)

4070511 Tubing Set Waste System Assembly rev A As of 11-20-00				
Item	Description	Rev	Qty	Remarks
4070511-AS	-TUBING SET WASTE SYSTEM ASBY	A	0	DOCUMENT ONLY
4072034	STOPPER 2-LITER BOTTLE	B	1	
48124	FITTING 3/16 Y-CONN PLASTIC	C	1	
49902	FTG M LUER X 1/4 BARB PP	A	1	
49904	FTG M LUER X 5/32 BARB PP	B	2	
49907	FTG 1/4X1/4 ELBOW 90 PP	B	2	
67262	TUBING,SILICON,1/8 ID X 1/4 OD	B	0.63	3.75"(2X)
67468	TUBING SILICON 3/16ID X 3/8OD	A	4	24"(2X)
98146	BAG ZIP-LOCK MEDIUM 10X12	A	0	


NOTES:
1 WASH PARTS WITH ALCOHOL AND BLOW DRY;PRIOR TO ASSEMBLY. ASSEMBLY MUST BE DUST FREE BOTH INTERNALLY & EXTERNALLY.
2 ALL SURFACES AND INSIDE OF ALL TUBES MUST BE FREE OF ADHESIVE,NICKS,BURRS OR ANY SURFACE DEFECTS. (USE STYLUS 4072042 AND 4072043 TO CLEAR OUT MANIFOLD PINS)
3 SLIDE TEFLON DISPENSE TUBES OVER THE STAINLESS DISPENSE TUBE USING JIG. SEE BOM
ISOPROPYL ALCOHOL MAY BE USED TO LUBRICATE TUBING DURING INSTALLATION.
4. PLACE COMPLETED ASSEMBLY IN A CLEAN ZIP LOC BAG(98011)
12105 8X
4072011
1 MANIFOLD SEE BOM
1 CLEAN THOROUGHLY.4072012
4072012 ALIGN IN GROOVE
4072517 JIG HOLDER, MANIFOLD
STEP 1
49908
49903 TIGHTEN BY HAND ONLY
49906 2X DO NOT OVER TIGHTEN
STEP 2
3 TUBE,DISPENSE TEFLON SEE BOM FOR TUBE & QUANTITY SEE DETAIL A
2
STEP 3
.035
DETAIL A
JIG TEFLON SLEEVE INSTALL SEE BOM
INSERT TUBE INTO JIG AS SHOWN.
END VIEW OF MANIFOLD
SEE STEP 3
INSERT MANIFOLD INTO 4072057 & WRAP A RUBBER BAND AROUND AS SHOWN.
99204
4072057
STEP 4
REV DESCRIPTION ECO DATE BY
B. CHG PER ECO 30225 12/7/98 BPS
A. RELEASE TO PRODUCTION 29346 6/6/97 BPS
UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES
PRODUCTION TOLERANCES
.XX±.010 ANGULAR TOL.±2°
.XXX±.005
MATERIAL:
SURFACE FINISH 63
FINISH:
DO NOT SCALE
REMOVE ALL BURRS
BREAK SHARP EDGES
SIGNATURE DATE
DRN BY: B.SMITH 2/14/97
ENGR: B.BEDARD 6/6/97
THIRD ANGLE PROJECTION
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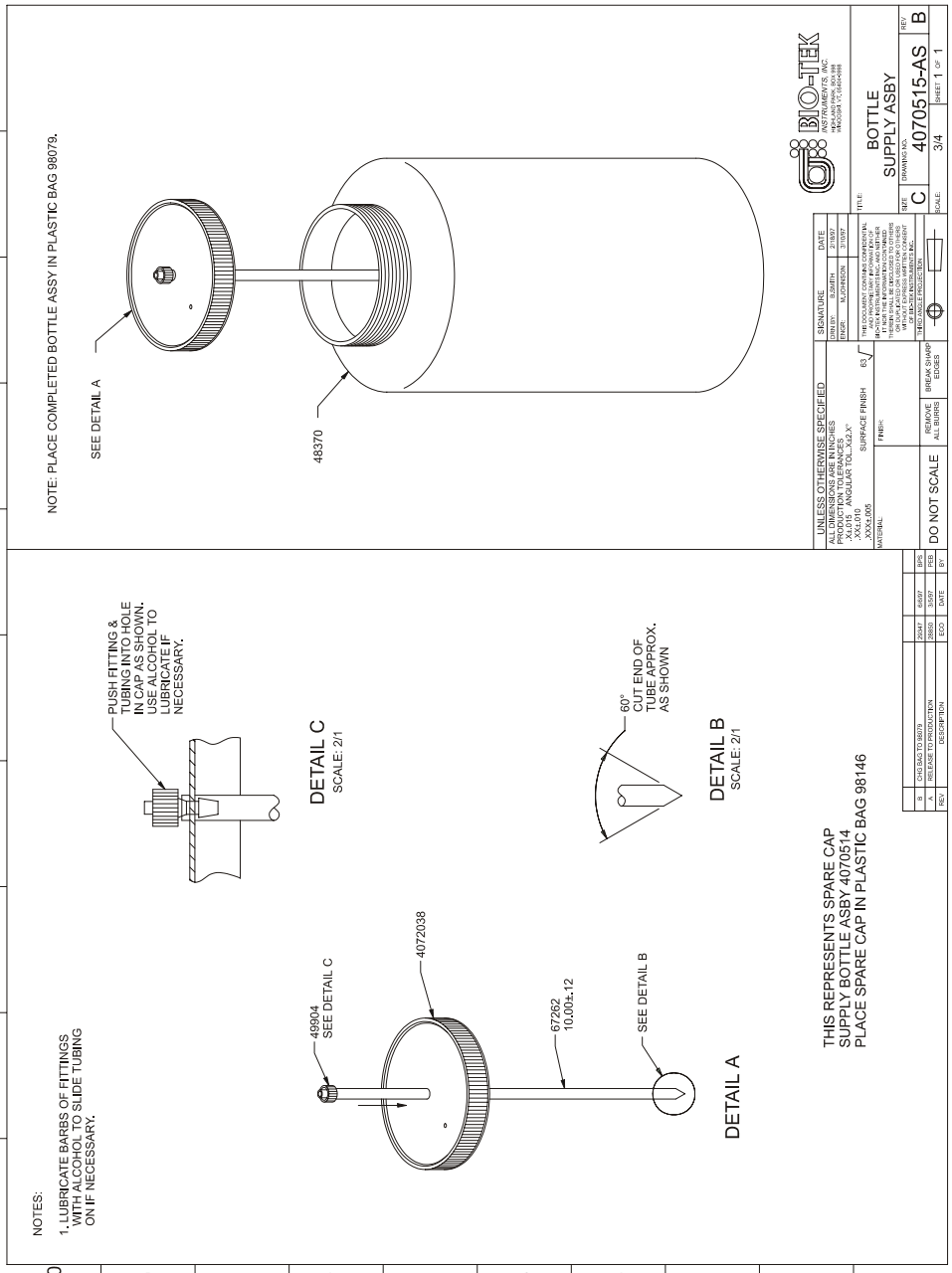
BIO-TEK INSTRUMENTS, INC.
HIGHLAND PARK, BOX 998
WINOOSKI, VT. 05404-0998
TITLE: MANIFOLD ASBY 12 WELL
SIZE C
DRAWING NO. 4070513-AS
REV B
SCALE: 1/1
SHEET 1 OF 1

4070513-AS Manifold ASBY 12 Well (Page 1 of 1)

4070512 Manifold Assembly, 8-Well rev B As of 11-20-00				
Item	Description	Rev	Qty	Remarks
12105	SCR PAN 8-32X1/2 PHILLIPS SS	A	8	
2872220-MP	-TEFLON DISPENSE TUBE ASBY MP	D	0	DOCUMENT ONLY
2872538	JIG .0595 DIA TEFLON TUBE DRAW	A	0	TOOL ONLY
4070513-AS	-MANIFOLD ASBY 12 WELL	B	0	DOCUMENT ONLY
4072010	MANIFOLD WASHER 8 WELL	G	1	
4072011	TOP WASHER MANIFOLD	E	1	
4072012	GASKET WASHER MANIFOLD	A	1	
4072041	TUBE DISPENSE TEFLON	B	8	
4072041-DG	-TUBE DISPENSE TEFLON	A	0	DOCUMENT ONLY
4072042	STYLUS, TUBE ASPIRATE	C	0	TOOL ONLY
4072043	STYLUS, TUBE DISPENSE	C	0	TOOL ONLY
4072057	PACKING MANIFOLD	A	1	
4072507	JIG TEFLON TUBE CUTTING	A	0	TOOL ONLY
4072508	JIG TEFLON SLEEVE INSTALL	A	0	TOOL ONLY
4072517	JIG HOLDER MANIFOLD	A	0	TOOL ONLY
49903	FTG M LUER X 1/4-28 PP	A	1	
49906	FTG F LUER X 1/4-28 PP	A	2	
49908	O-RING 1/4X1/32 70DURO EP	A	1	
98011	BAG ZIP-LOCK SMALL	A	0	
99204	RUBBER BAND 7 X 1/8 X 1/16	A	1	

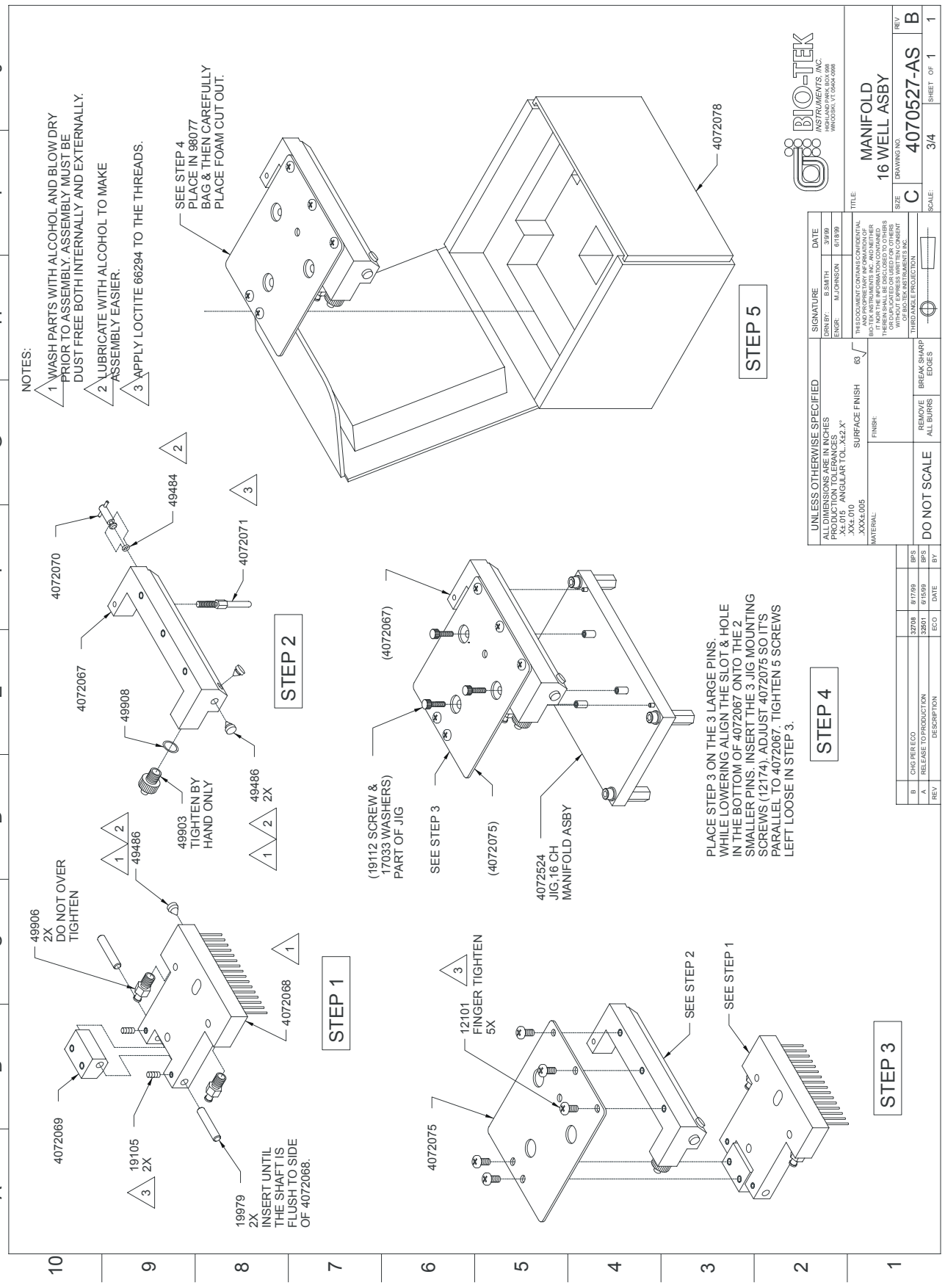
4070513 Manifold Assembly, 12-Well rev B As of 11-20-00				
Item	Description	Rev	Qty	Remarks
12105	SCR PAN 8-32X1/2 PHILLIPS SS	A	8	
2872220-MP	-TEFLON DISPENSE TUBE ASBY MP	D	0	DOCUMENT ONLY
2872538	JIG .0595 DIA TEFLON TUBE DRAW	A	0	TOOL ONLY
4070513-AS	-MANIFOLD ASBY 12 WELL	B	0	DOCUMENT ONLY
4072009	MANIFOLD WASHER 12 WELL	G	1	
4072011	TOP WASHER MANIFOLD	E	1	
4072012	GASKET WASHER MANIFOLD	A	1	
4072041	TUBE DISPENSE TEFLON	B	12	
4072041-DG	-TUBE DISPENSE TEFLON	A	0	DOCUMENT ONLY
4072042	STYLUS, TUBE ASPIRATE	C	0	TOOL ONLY
4072043	STYLUS, TUBE DISPENSE	C	0	TOOL ONLY
4072057	PACKING MANIFOLD	A	1	
4072507	JIG TEFLON TUBE CUTTING	A	0	TOOL ONLY
4072508	JIG TEFLON SLEEVE INSTALL	A	0	TOOL ONLY
4072517	JIG HOLDER MANIFOLD	A	0	TOOL ONLY
49903	FTG M LUER X 1/4-28 PP	A	1	
49906	FTG F LUER X 1/4-28 PP	A	2	
49908	O-RING 1/4X1/32 70DURO EP	A	1	
98011	BAG ZIP-LOCK SMALL	A	0	
99204	RUBBER BAND 7 X 1/8 X 1/16	A	1	

4070519 Manifold Assembly, 8-Well, Short Dispense rev A As of 11-20-00				
Item	Description	Rev	Qty	Remarks
12105	SCR PAN 8-32X1/2 PHILLIPS SS	A	8	
4070513-AS	-MANIFOLD ASBY 12 WELL	B	0	DOCUMENT ONLY
4072011	TOP WASHER MANIFOLD	E	1	
4072012	GASKET WASHER MANIFOLD	A	1	
4072046	MANIFOLD 8 WELL SHORT DISP	E	1	
4072047	TUBE DISPENSE TEFLON SHORT	B	8	
4072047-DG	-TUBE DISPENSE TEFLON SHORT	A	0	DOCUMENT ONLY
4072057	PACKING MANIFOLD	A	1	
4072516	JIG SHORT TEFLON SLEEVE INSTL	A	0	TOOL ONLY
49903	FTG M LUER X 1/4-28 PP	A	1	
49906	FTG F LUER X 1/4-28 PP	A	2	
49908	O-RING 1/4X1/32 70DURO EP	A	1	
98011	BAG ZIP-LOCK SMALL	A	0	
99204	RUBBER BAND 7 X 1/8 X 1/16	A	1	



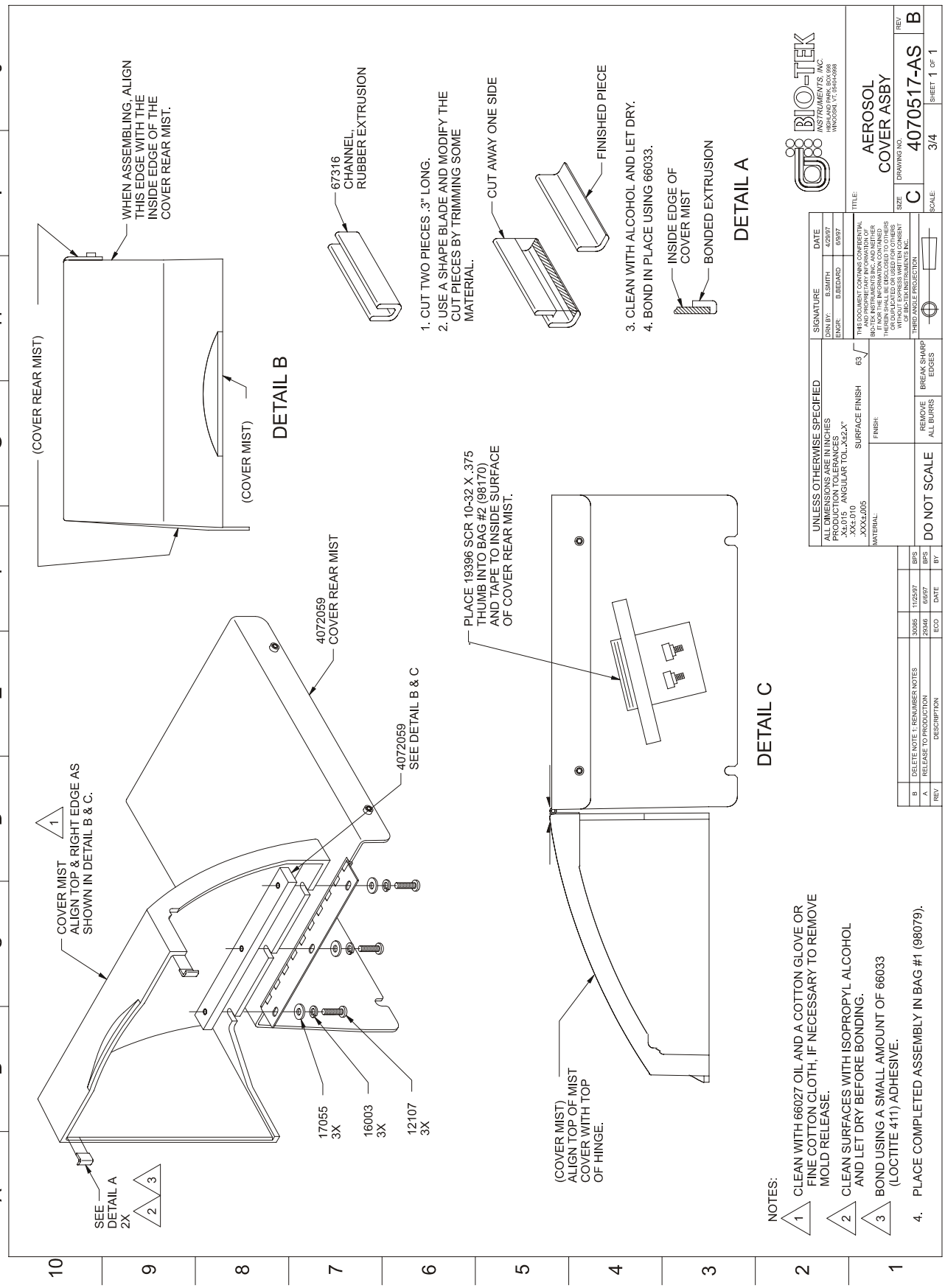
4070515-AS Bottle Supply ASBY (Page 1 of 1)

4070515 Bottle Supply Assembly rev B As of 11-20-00				
Item	Description	Rev	Qty	Remarks
4070515-AS	-BOTTLE SUPPLY ASBY	B	0	DOCUMENT ONLY
4072038	CAP MOD 2 HOLE 89MM PP LINED	A	1	
48370	BTL 2QT LG MOUTH PE	D	1	
49904	FTG M LUER X 5/32 BARB PP	B	1	
67262	TUBING,SILICON,1/8 ID X 1/4 OD	B	0.83	10"
98079	BAG POLY 12 X 18	B	0	



4070516-AS Syringe Pump ASBY (Page 1 of 1)

4070516 Syringe Pump Assembly rev B As of 11-20-00				
Item	Description	Rev	Qty	Remarks
12062	SCR PAN 8-32X3/4 SS SLOT	A	2	
12105	SCR PAN 8-32X1/2 PHILLIPS SS	A	4	
14041	NUT SQUARE 8-32 SS	A	4	
16002	LKWSHR #4 HELICAL SPR SS	A	2	
16016	LKWSHR #8 HELICAL SPR SS	A	10	
16067	WSHR .177IS X .50 OD X .062 SS	A	4	
17059	WSHR FL .188IDX.375ODX.049 SS	B	6	
18034	WSHR SPRING WAVE #4 SS	B	2	
19112	SCR SOCK CAP 4-40X3/8 SS	B	2	
19143	SCR SOCK CAP#8-32X1/2 SS	A	4	
19397	SCR SELF SEAL 10-32X.75	A	1	
19401	STANDOFF M/F HEX 4-40X9/16 SS	A	2	
4070506	CABLE SYRINGE PUMP ASBY	D	1	CABLE B
4070516-AS	-SYRINGE PUMP ASBY	B	0	DOCUMENT ONLY
4070518	SEAL AND CYLINDER ASBY	A	1	
4072023	MOUNTING BRACKET SYRINGE PUMP	C	1	
4072025	NUT LEAD SCREW	B	1	
4072027	MOUNT SYRINGE PUMP PISTON	D	1	
4072060	PISTON SYRINGE PUMP POLISHED	A	1	
4072506	JIG GLUE SYRINGE PUMP	B	0	TOOL ONLY
66006	LOCTITE 242 BLUE	A	0	A/R
66039	GREASE, LINEAR WAY	A	0	A/R


(COVER REAR MIST)
WHEN ASSEMBLING, ALIGN THIS EDGE WITH THE INSIDE EDGE OF THE COVER REAR MIST.
(COVER MIST)
DETAIL B
67316 CHANNEL, RUBBER EXTRUSION
1. CUT TWO PIECES .3" LONG.
2. USE A SHAPE BLADE AND MODIFY THE CUT PIECES BY TRIMMING SOME MATERIAL.
CUT AWAY ONE SIDE
FINISHED PIECE
3. CLEAN WITH ALCOHOL AND LET DRY.
4. BOND IN PLACE USING 66033.
INSIDE EDGE OF COVER MIST
BONDED EXTRUSION
DETAIL A
COVER MIST ALIGN TOP & RIGHT EDGE AS SHOWN IN DETAIL B & C.
4072059 COVER REAR MIST
4072059 SEE DETAIL B & C
SEE DETAIL A 2X
17055 3X
16003 3X
12107 3X
PLACE 19396 SCR 10-32 X .375 THUMB INTO BAG #2 (98170) AND TAPE TO INSIDE SURFACE OF COVER REAR MIST.
(COVER MIST) ALIGN TOP OF MIST COVER WITH TOP OF HINGE.
DETAIL C
NOTES:
1. CLEAN WITH 66027 OIL AND A COTTON GLOVE OR FINE COTTON CLOTH, IF NECESSARY TO REMOVE MOLD RELEASE.
2. CLEAN SURFACES WITH ISOPROPYL ALCOHOL AND LET DRY BEFORE BONDING.
3. BOND USING A SMALL AMOUNT OF 66033 (LOCTITE 411) ADHESIVE.
4. PLACE COMPLETED ASSEMBLY IN BAG #1 (98079).
REV DESCRIPTION ECO DATE BY
B DELETE NOTE 1; RENUMBER NOTES 30065 11/25/97 BPS
A RELEASE TO PRODUCTION 29346 6/6/97 BPS
UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES
PRODUCTION TOLERANCES
.XX±.015 ANGULAR TOL.±2°
.XXX±.005 SURFACE FINISH 63
MATERIAL: FINISH:
DO NOT SCALE
REMOVE ALL BURRS
BREAK SHARP EDGES
SIGNATURE DATE
DRN BY: B.SMITH 4/29/97
ENGR: B.BEDARD 6/6/97
THIRD ANGLE PROJECTION
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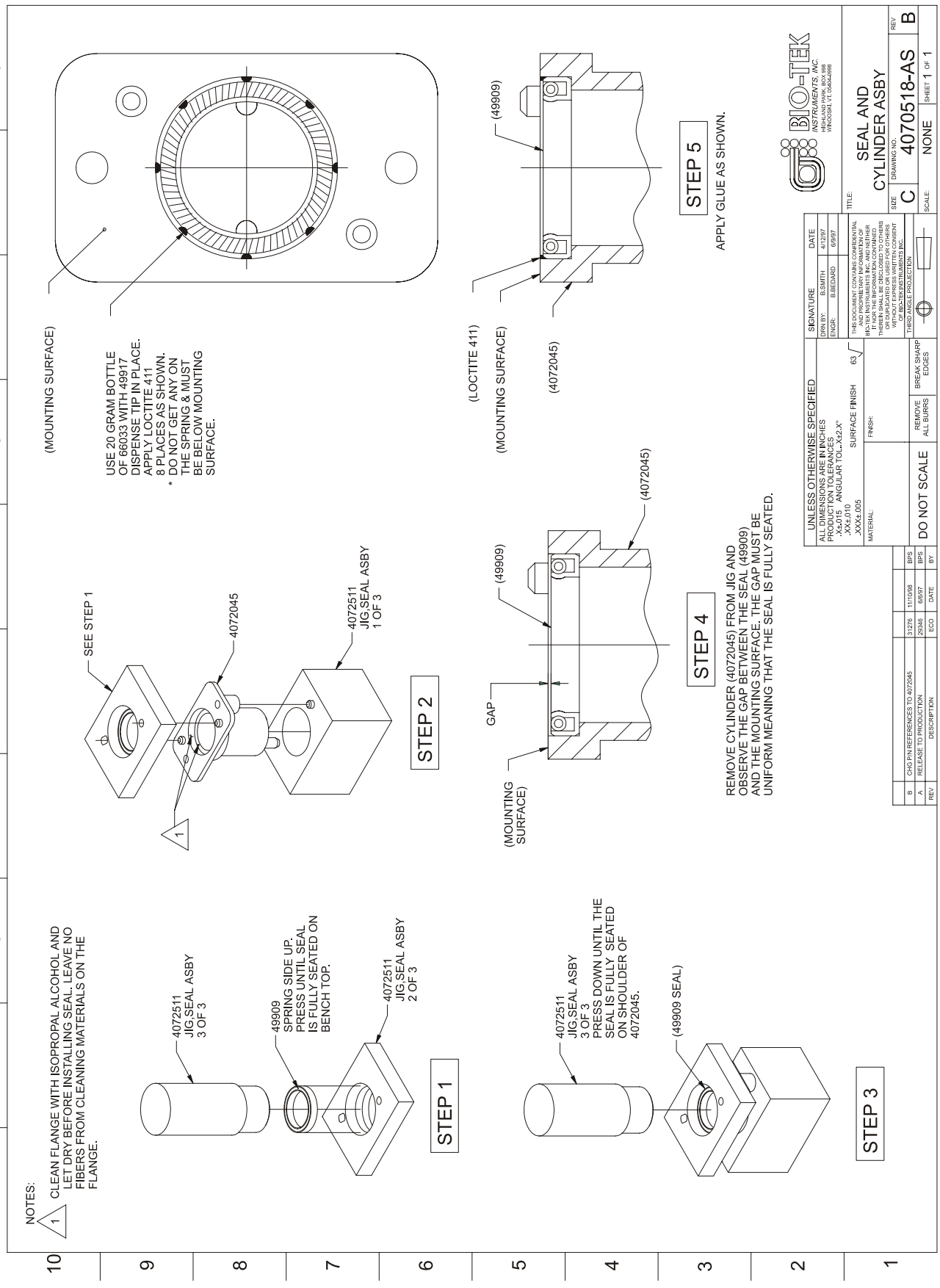
BIO-TEK INSTRUMENTS, INC. HIGHLAND PARK, BOX 998 WINOOSKI, VT. 05404-0998
TITLE: AEROSOL COVER ASBY
SIZE C DRAWING NO. 4070517-AS REV B
SCALE: 3/4 SHEET 1 OF 1

4070517-AS Aerosol Cover ASBY (Page 1 of 1)

4070517 Aerosol Cover Assembly rev B As of 11-20-00				
Item	Description	Rev	Qty	Remarks
12107	SCR PAN 6-32X1/2 PHILLIPS SS	A	3	
16003	LKWSHR #6 HELICAL SPR SS	A	3	
17055	WSHR FL .156IDX.375ODX.049 SS	B	3	
19396	SCR 10-32X.375 THUMB NYLON	A	2	
4070517-AS	-AEROSOL COVER ASBY	B	0	DOCUMENT ONLY
4072020	COVER MIST	B	1	
4072021	COVER REAR MIST	A	1	
4072059	RETAINER BAR AEROSOL COVER	A	1	
48255	TAPE LAB 1" WIDE YELLOW	A	0	A/R
67316	CHANNEL,RUBBER EXTRUSION	A	0.08	
98079	BAG POLY 12 X 18	B	0	BAG #1
98170	BAG ZIP-LOC 3X4	A	0	BAG #2


NOTES:
1 CLEAN FLANGE WITH ISOPROPAL ALCOHOL AND LET DRY BEFORE INSTALLING SEAL. LEAVE NO FIBERS FROM CLEANING MATERIALS ON THE FLANGE.
4072511 JIG,SEAL ASBY 3 OF 3
49909 SPRING SIDE UP. PRESS UNTIL SEAL IS FULLY SEATED ON BENCH TOP.
4072511 JIG,SEAL ASBY 2 OF 3
STEP 1
4072511 JIG,SEAL ASBY 3 OF 3 PRESS DOWN UNTIL THE SEAL IS FULLY SEATED ON SHOULDER OF 4072045.
(49909 SEAL)
STEP 3
SEE STEP 1
4072045
4072511 JIG,SEAL ASBY 1 OF 3
1
STEP 2
(MOUNTING SURFACE)
USE 20 GRAM BOTTLE OF 66033 WITH 49917 DISPENSE TIP IN PLACE. APPLY LOCTITE 411 8 PLACES AS SHOWN. * DO NOT GET ANY ON THE SPRING & MUST BE BELOW MOUNTING SURFACE.
(49909)
GAP
(MOUNTING SURFACE)
(4072045)
STEP 4
REMOVE CYLINDER (4072045) FROM JIG AND OBSERVE THE GAP BETWEEN THE SEAL (49909) AND THE MOUNTING SURFACE. THE GAP MUST BE UNIFORM MEANING THAT THE SEAL IS FULLY SEATED.
(LOCTITE 411)
(MOUNTING SURFACE)
(49909)
(4072045)
STEP 5
APPLY GLUE AS SHOWN.
REV DESCRIPTION ECO DATE BY
A RELEASE TO PRODUCTION 29546 6/6/97 BPS
B CHG P/N REFERENCES TO 4072045 31376 11/10/98 BPS
UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES
PRODUCTION TOLERANCES
.XX±.015 ANGULAR TOL. ±2.X°
.XXX±.005 SURFACE FINISH 63
MATERIAL: FINISH:
DO NOT SCALE
REMOVE ALL BURRS
BREAK SHARP EDGES
SIGNATURE DATE
DRN BY: B.SMITH 4/12/97
ENGR: B.BEDARD 6/9/97
THIRD ANGLE PROJECTION
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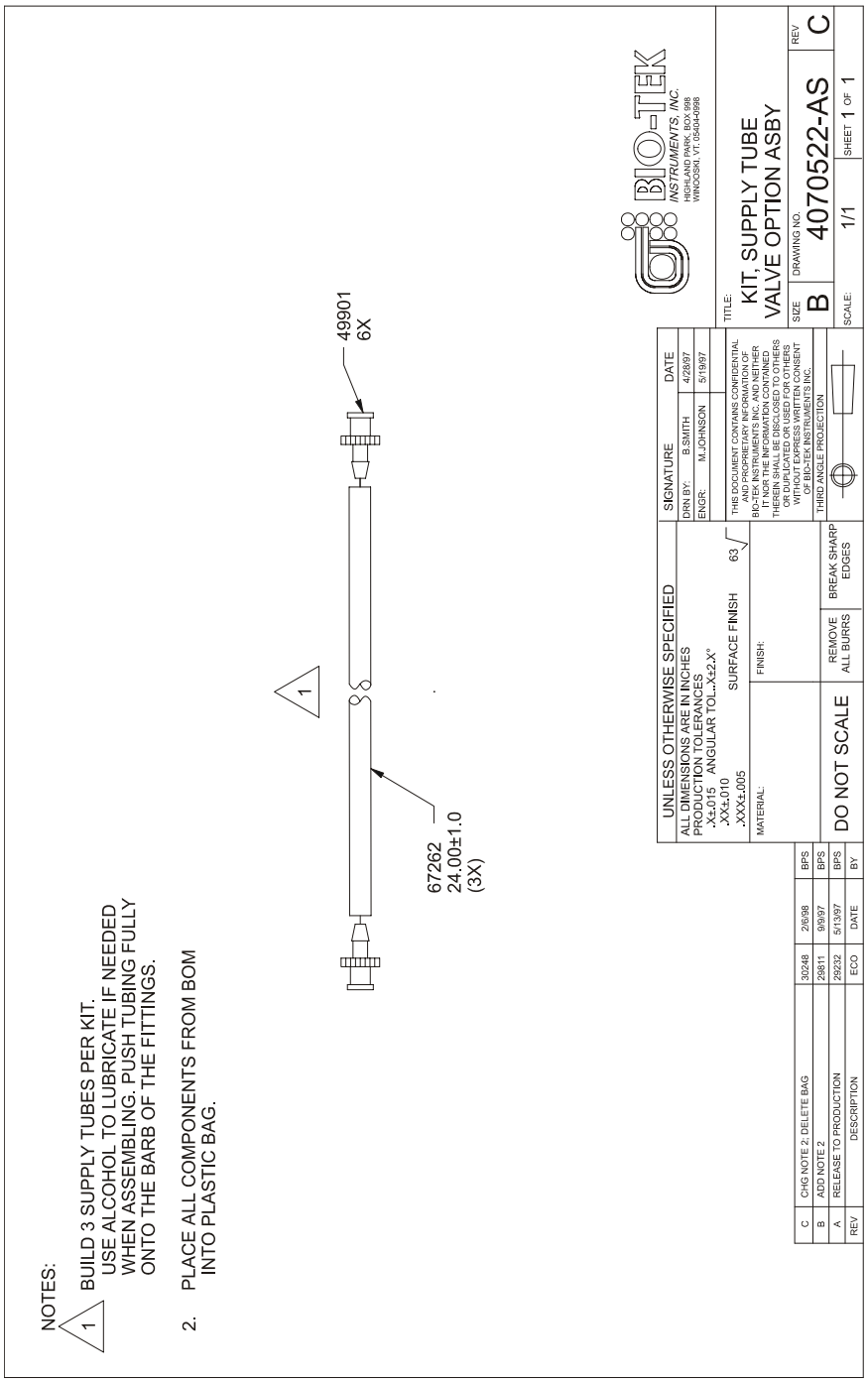
BIO-TEK INSTRUMENTS, INC. HIGHLAND PARK, BOX 998 WINOOSKI, VT 05404-0998
TITLE: SEAL AND CYLINDER ASBY
SIZE C DRAWING NO. 4070518-AS REV B
SCALE: NONE SHEET 1 OF 1

4070518-AS Seal and Cylinder ASBY (Page 1 of 1)

4070518 Seal & Cylinder Assembly rev A As of 11-20-00				
Item	Description	Rev	Qty	Remarks
4070518-AS	-SEAL AND CYLINDER ASBY	B	0	DOCUMENT ONLY
4072045	SYRINGE PUMP CAP MACHINED	C	1	
4072511	JIG SEAL ASBY	A	0	TOOL ONLY
49909	SEAL ENERGIZED .875X1.12 PE	A	1	
66033	LOCTITE INSTANT GEL	C	0	A/R


NOTES:
1 BUILD 3 SUPPLY TUBES PER KIT. USE ALCOHOL TO LUBRICATE IF NEEDED WHEN ASSEMBLING. PUSH TUBING FULLY ONTO THE BARB OF THE FITTINGS.
2. PLACE ALL COMPONENTS FROM BOM INTO PLASTIC BAG.
49901 6X
67262 24.00±1.0 (3X)
BIO-TEK INSTRUMENTS, INC.
HIGHLAND PARK, BOX 998 WINOOSKI, VT. 05404-0998
TITLE: KIT, SUPPLY TUBE VALVE OPTION ASBY
SIZE B
DRAWING NO. 4070522-AS
REV C
SCALE: 1/1
SHEET 1 OF 1
UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES
PRODUCTION TOLERANCES
.X±.015 ANGULAR TOL...X±2.X°
.XX±.010
.XXX±.005
SURFACE FINISH 63
MATERIAL:
FINISH:
DO NOT SCALE
REMOVE ALL BURRS
BREAK SHARP EDGES
SIGNATURE DATE
DRN BY: B.SMITH 4/28/97
ENGR: M.JOHNSON 5/19/97
THIRD ANGLE PROJECTION
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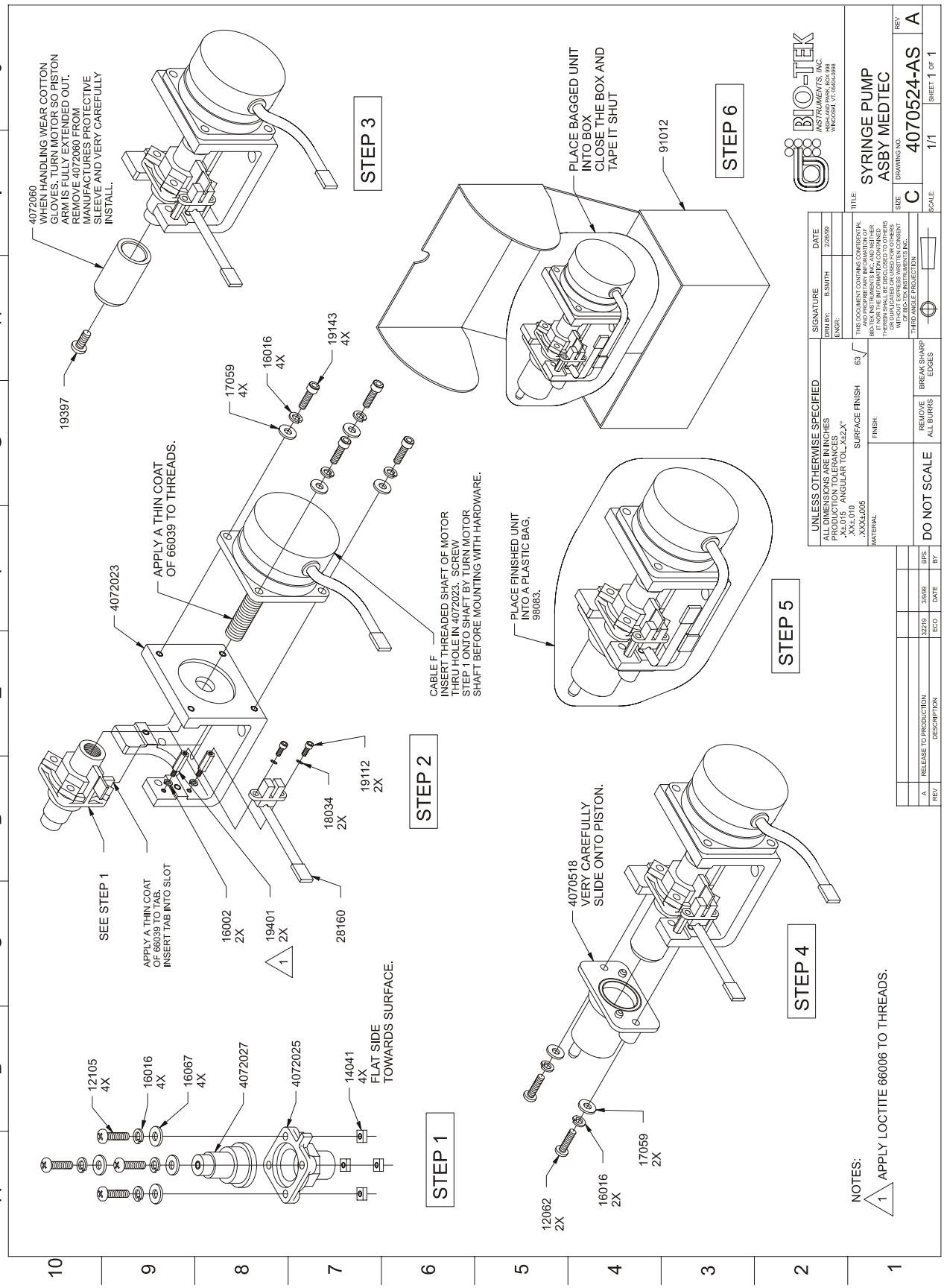
C CHG NOTE 2; DELETE BAG 30248 2/6/98 BPS
B ADD NOTE 2 29811 9/9/97 BPS
A RELEASE TO PRODUCTION 29232 5/13/97 BPS
REV DESCRIPTION ECO DATE BY

4070522-AS Kit, Supply Tube Valve Opto Assembly (Page 1 of 1)

4070522 Kit, Supply Tube Valve Opto Assembly rev C As of 11-20-00				
Item	Description	Rev	Qty	Remarks
15011	NUT KEPS 8-32	B	3	IN BAG
4070504	CABLE SOLENOID ASBY	C	3	IN BAG
4070522-AS	-KIT,SUPPLY TUBE VLVE OPT ASBY	C	0	DOCUMENT ONLY
42113	JUMPER FOR BERG HEDRS	A	1	IN BAG
48124	FITTING 3/16 Y-CONN PLASTIC	C	2	IN BAG
49539	CLIP WIRE PVC SELF ADHESIVE	A	2	IN BAG
49893	BUSHING SNAP .25OID	A	4	IN BAG
49901	FTG F LUER X 5/32 BARB PP	A	6	
49904	FTG M LUER X 5/32 BARB PP	B	4	IN BAG
67262	TUBING,SILICON,1/8 ID X 1/4 OD	B	10.1	1.5", 4"(3X), 5.25", 8.25", 11", 11.25", 24"(3X) IN BAG
98146	BAG ZIP-LOCK MEDIUM 10X12	A	0	


STEP 1
STEP 2
STEP 3
STEP 4
STEP 5
STEP 6
12105 4X
16016 4X
16067 4X
4072027
4072025
14041 4X FLAT SIDE TOWARDS SURFACE.
SEE STEP 1
APPLY A THIN COAT OF 66039 TO TAB. INSERT TAB INTO SLOT
16002 2X
19401 2X
28160
18034 2X
19112 2X
4072023
APPLY A THIN COAT OF 66039 TO THREADS.
CABLE F INSERT THREADED SHAFT OF MOTOR THRU HOLE IN 4072023. SCREW STEP 1 ONTO SHAFT BY TURN MOTOR SHAFT BEFORE MOUNTING WITH HARDWARE.
17059 4X
16016 4X
19143 4X
19397
4072060 WHEN HANDLING WEAR COTTON GLOVES. TURN MOTOR SO PISTON ARM IS FULLY EXTENDED OUT. REMOVE 4072060 FROM MANUFACTURES PROTECTIVE SLEEVE AND VERY CAREFULLY INSTALL.
PLACE FINISHED UNIT INTO A PLASTIC BAG, 98083.
4070518 VERY CAREFULLY SLIDE ONTO PISTON.
12062 2X
16016 2X
17059 2X
PLACE BAGGED UNIT INTO BOX CLOSE THE BOX AND TAPE IT SHUT
91012
NOTES:
1 APPLY LOCTITE 66006 TO THREADS.
UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES
PRODUCTION TOLERANCES
.XX±.015 ANGULAR TOL.±2°
.XXX±.010 SURFACE FINISH 63
.XXXX±.005
MATERIAL:
FINISH:
DO NOT SCALE
REMOVE ALL BURRS
BREAK SHARP EDGES
SIGNATURE DATE
DRN BY: B.SMITH 2/26/99
ENGR:
THIRD ANGLE PROJECTION
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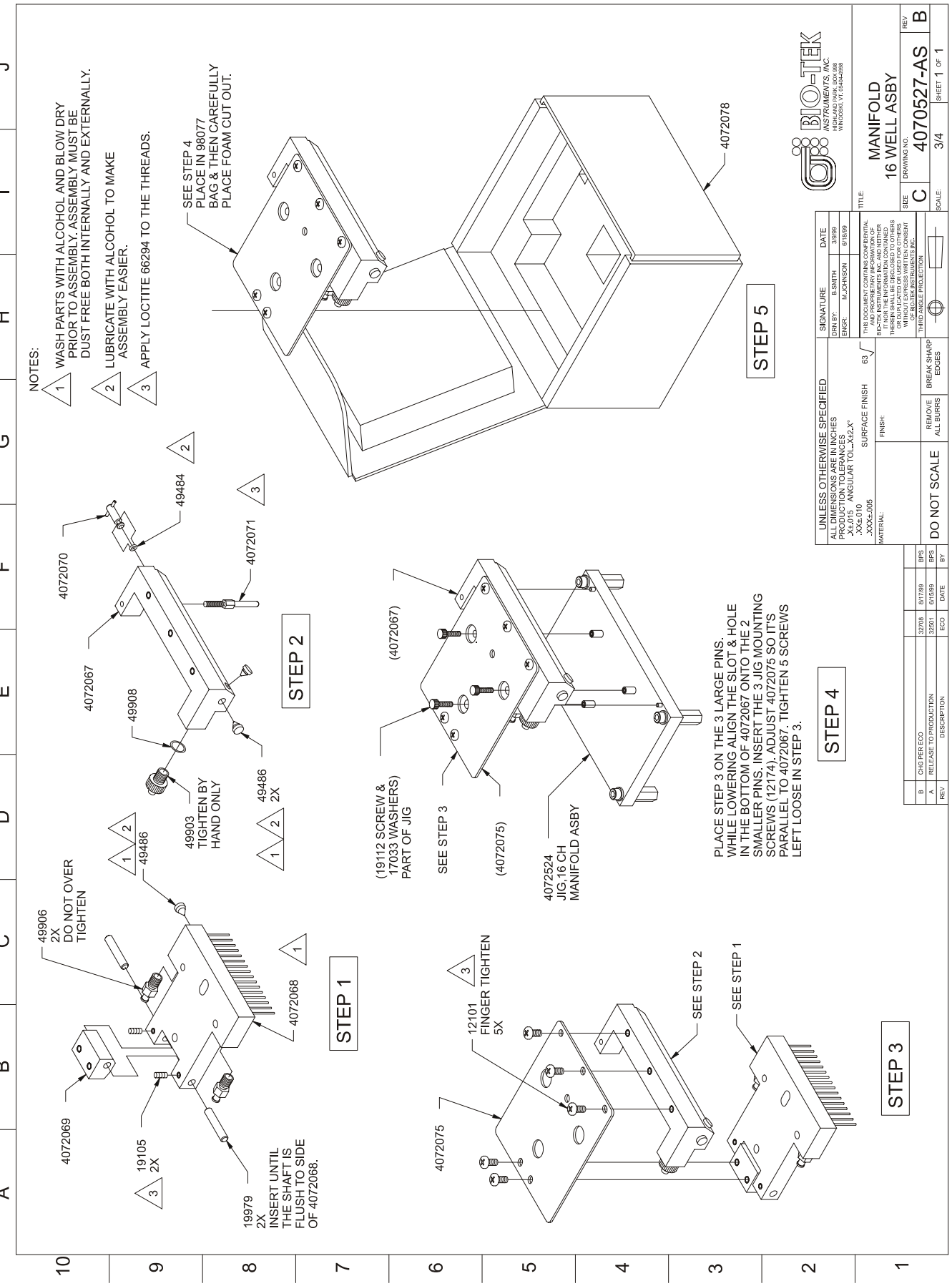
TITLE:
SYRINGE PUMP ASBY MEDTEC
SIZE C
DRAWING NO. 4070524-AS
REV A
SCALE: 1/1
SHEET 1 OF 1
BIO-TEK INSTRUMENTS, INC.
HIGHLAND PARK, BOX 998
WINOOSKI, VT. 05404-0998
REV DESCRIPTION ECO DATE BY
A RELEASE TO PRODUCTION 32219 3/4/99 BPS

4070524-AS Syringe Pump ASBY Medtec (Page 1 of 1)

4070524 Syringe Pump Assembly Medtec rev A As of 11-20-00				
Item	Description	Rev	Qty	Remarks
12062	SCR PAN 8-32X3/4 SS SLOT	A	2	
12105	SCR PAN 8-32X1/2 PHILLIPS SS	A	4	
14041	NUT SQUARE 8-32 SS	A	4	
16002	LKWSHR #4 HELICAL SPR SS	A	2	
16016	LKWSHR #8 HELICAL SPR SS	A	10	
16067	WSHR .177IS X .50 OD X .062 SS	A	4	
17059	WSHR FL .188IDX.375ODX.049 SS	B	6	
18034	WSHR SPRING WAVE #4 SS	B	2	
19112	SCR SOCK CAP 4-40X3/8 SS	B	2	
19143	SCR SOCK CAP#8-32X1/2 SS	A	4	
19397	SCR SELF SEAL 10-32X.75	A	1	
19401	STANDOFF M/F HEX 4-40X9/16 SS	A	2	
28160	OPTO SENSOR MEDTEC	A	1	
4070518	SEAL AND CYLINDER ASBY	A	1	
4070524-AS	-SYRINGE PUMP ASBY MEDTEC	A	0	DOCUMENT ONLY
4070525	CABLE SYRINGE PUMP ASBY MEDTEC	A	1	CABLE "F"
4072023	MOUNTING BRACKET SYRINGE PUMP	C	1	
4072025	NUT LEAD SCREW	B	1	
4072027	MOUNT SYRINGE PUMP PISTON	D	1	
4072060	PISTON SYRINGE PUMP POLISHED	A	1	
4072506	JIG GLUE SYRINGE PUMP	B	0	
66006	LOCTITE 242 BLUE	A	0	A/R
66039	GREASE, LINEAR WAY	A	0	A/R
91012	BOX 5X5X9 200# TEST WHITE	A	0	
98083	BAG,9X12 PLASTIC 2MIL	A	0	


NOTES:
1 WASH PARTS WITH ALCOHOL AND BLOW DRY PRIOR TO ASSEMBLY. ASSEMBLY MUST BE DUST FREE BOTH INTERNALLY AND EXTERNALLY.
2 LUBRICATE WITH ALCOHOL TO MAKE ASSEMBLY EASIER.
3 APPLY LOCTITE 66294 TO THE THREADS.
SEE STEP 4 PLACE IN 98077 BAG & THEN CAREFULLY PLACE FOAM CUT OUT.
4072078
STEP 5
4072070
49484
4072071
4072067
49908
49903 TIGHTEN BY HAND ONLY
49486 2X
STEP 2
49906 2X DO NOT OVER TIGHTEN
49486
4072069
19105 2X
19979 2X INSERT UNTIL THE SHAFT IS FLUSH TO SIDE OF 4072068.
4072068
STEP 1
(19112 SCREW & 17033 WASHERS) PART OF JIG
(4072067)
SEE STEP 3
(4072075)
4072524 JIG,16 CH MANIFOLD ASBY
PLACE STEP 3 ON THE 3 LARGE PINS. WHILE LOWERING ALIGN THE SLOT & HOLE IN THE BOTTOM OF 4072067 ONTO THE 2 SMALLER PINS. INSERT THE 3 JIG MOUNTING SCREWS (12174). ADJUST 4072075 SO IT'S PARALLEL TO 4072067. TIGHTEN 5 SCREWS LEFT LOOSE IN STEP 3.
STEP 4
12101 FINGER TIGHTEN 5X
4072075
SEE STEP 2
SEE STEP 1
STEP 3
REV DESCRIPTION ECO DATE BY
A RELEASE TO PRODUCTION 32501 6/15/99 BPS
B CHG PER ECO 32708 8/17/99 BPS
UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES
PRODUCTION TOLERANCES
.X±.015 ANGULAR TOL...X±2.X°
.XX±.010
.XXX±.005
MATERIAL:
SURFACE FINISH 63
FINISH:
DO NOT SCALE
REMOVE ALL BURRS
BREAK SHARP EDGES
SIGNATURE DATE
DRN BY: B.SMITH 3/9/99
ENGR: M.JOHNSON 6/18/99
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THIRD ANGLE PROJECTION
BIO-TEK INSTRUMENTS, INC.
HIGHLAND PARK, P.O. BOX 998
WINOOSKI, VT. 05404-0998
TITLE:
MANIFOLD
16 WELL ASBY
SIZE C
DRAWING NO. 4070527-AS
REV B
SCALE: 3/4
SHEET 1 OF 1

4070527-AS Manifold 16 Well Assembly (Page 1 of 1)

4070527 Manifold 16 Well Assembly rev B As of 11-20-00				
Item	Description	Rev	Qty	Remarks
12101	SCR PAN 8-32X5/16 PHILLIPS SS	A	5	
19105	SCR SET 6-32 X 1/8 CUPPT SS	A	2	
19979	PIN DOWEL .1875 X .625 SS	A	2	
4070527-AS	MANIFOLD 16 WELL ASBY	B	0	DOCUMENT ONLY
4072042	STYLUS, TUBE ASPIRATE	C	0	TOOL ONLY
4072043	STYLUS, TUBE DISPENSE	C	0	TOOL ONLY
4072067	MANIFOLD DISPENSE 16 CH	D	1	
4072068	MANIFOLD ASPIRATE 16 CH	C	1	
4072069	MTG BLOCK MFD BRACKET	B	1	
4072070	PLUG MANIFOLD CHANNEL	C	1	
4072071	PIN GLIDE	D	1	
4072075	BRACKET DISP MANIFOLD MTG	A	1	
4072078	PACKING 16 CH MANIFOLD	A	1	
4072524	JIG 16 CH MANIFOLD ASBY	B	0	TOOL ONLY
49484	O-RING .203ODX.07DIA DUR70SIL	C	1	
49486	BUMPER ATS WASHER MANIFOLD	A	3	
49903	FTG M LUER X 1/4-28 PP	A	1	
49906	FTG F LUER X 1/4-28 PP	A	2	
49908	O-RING 1/4X1/32 70DURO EP	A	1	
66294	LOCTITE ASSURE 425	A	0	
99204	RUBBER BAND 7 X 1/8 X 1/16	A	2	

Section 6

Schematics

This section contains the Component Layout drawing and Electrical Schematic for the ELx50 Strip Washer. These documents are subject to change.

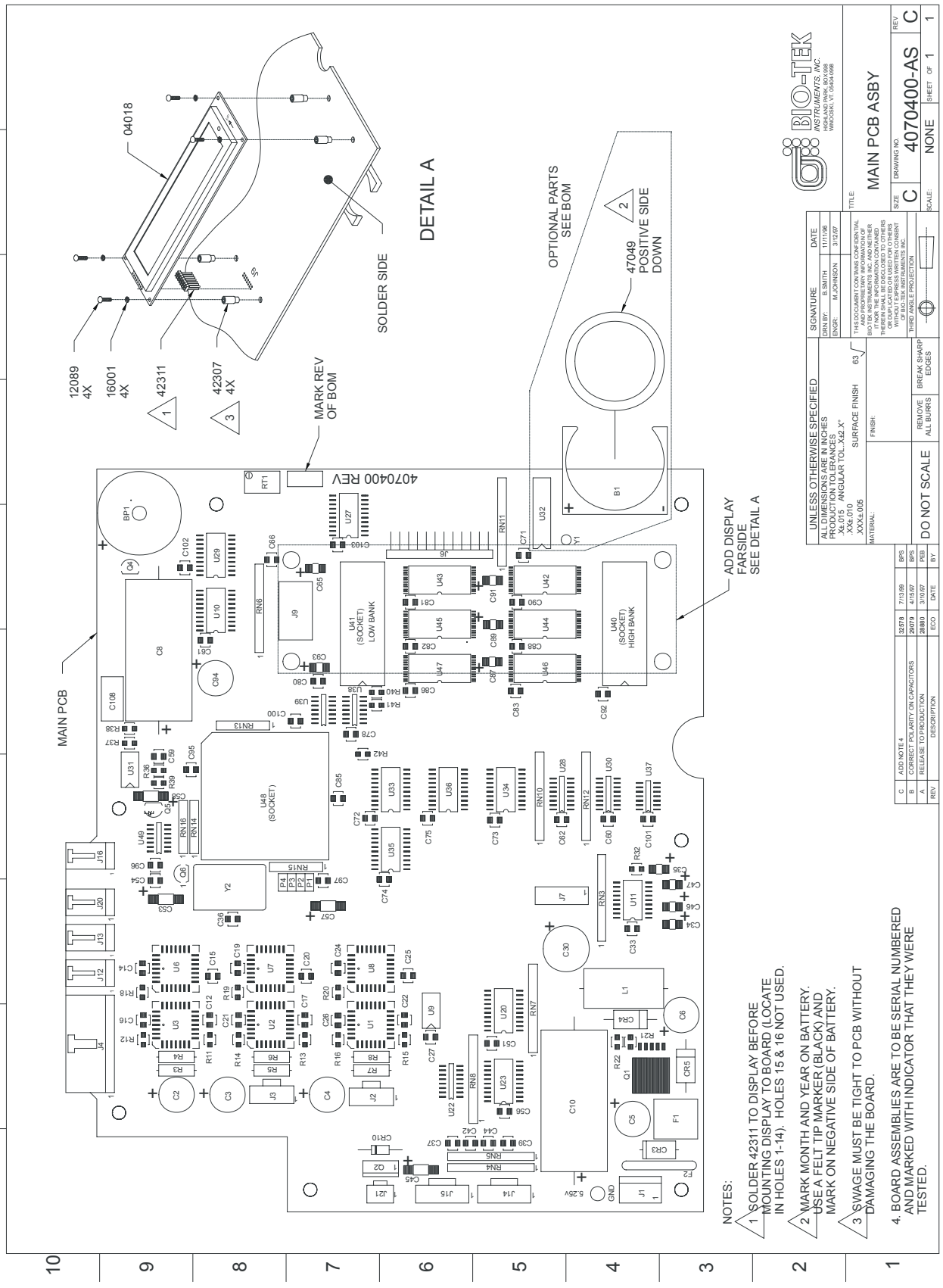
DRAWING # DESCRIPTION

4070400-AS Main PCB, page 6-3

4070400-SC Main PCB (Page 1 of 6), page 6-6

4070401-AS PCB Filters Assembly, page 6-12

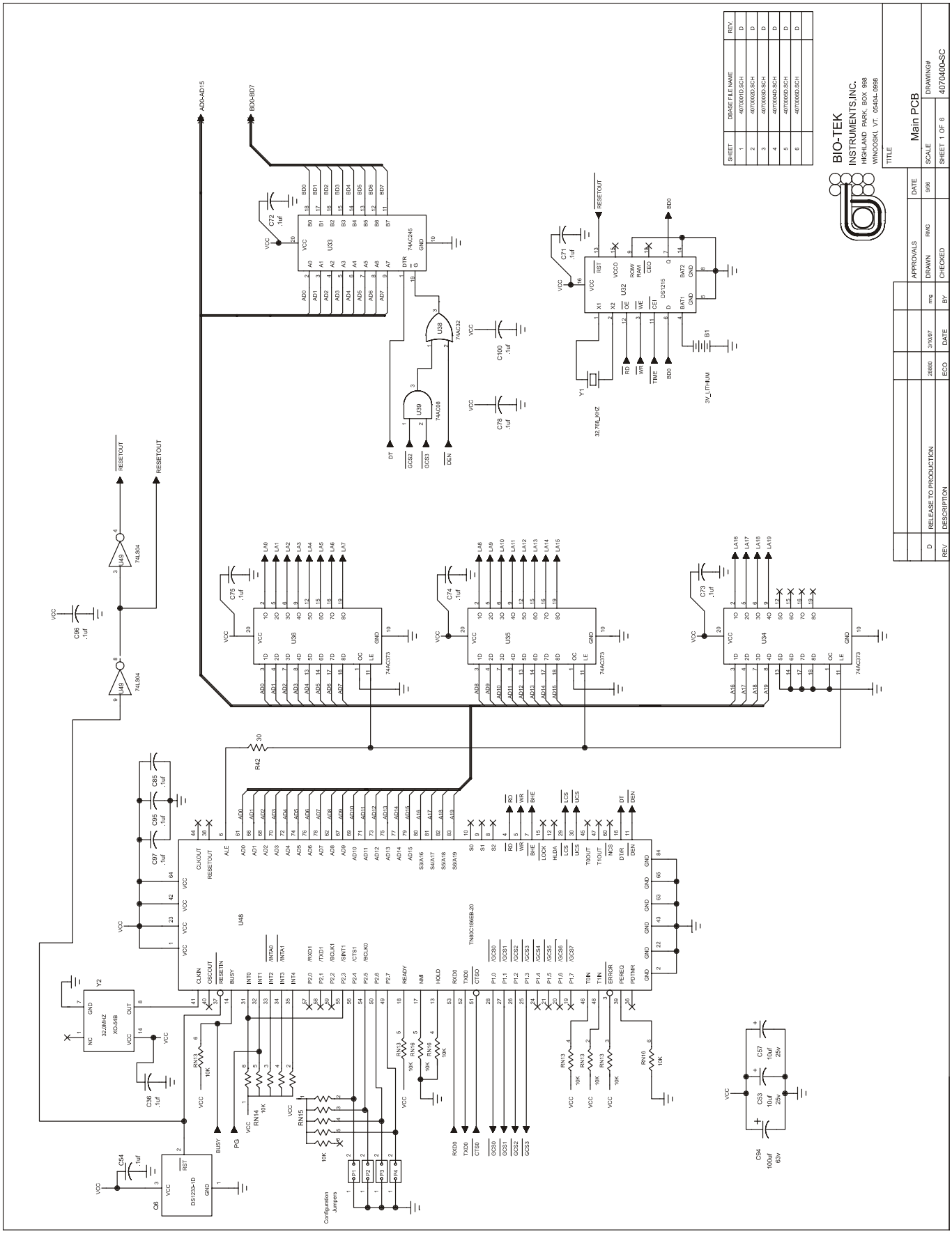
4070401-SC PCB Filters, page 6-13


DETAIL A
SOLDER SIDE
MARK REV OF BOM
OPTIONAL PARTS SEE BOM
47049 POSITIVE SIDE DOWN
ADD DISPLAY FARSIDE SEE DETAIL A
MAIN PCB
4070400 REV
NOTES:
1 SOLDER 42311 TO DISPLAY BEFORE MOUNTING DISPLAY TO BOARD (LOCATE IN HOLES 1-14). HOLES 15 & 16 NOT USED.
2 MARK MONTH AND YEAR ON BATTERY. USE A FELT TIP MARKER (BLACK) AND MARK ON NEGATIVE SIDE OF BATTERY.
3 SWAGE MUST BE TIGHT TO PCB WITHOUT DAMAGING THE BOARD.
4. BOARD ASSEMBLIES ARE TO BE SERIAL NUMBERED AND MARKED WITH INDICATOR THAT THEY WERE TESTED.
BIO-TEK INSTRUMENTS, INC.
MAIN PCB ASBY
4070400-AS
C
NONE

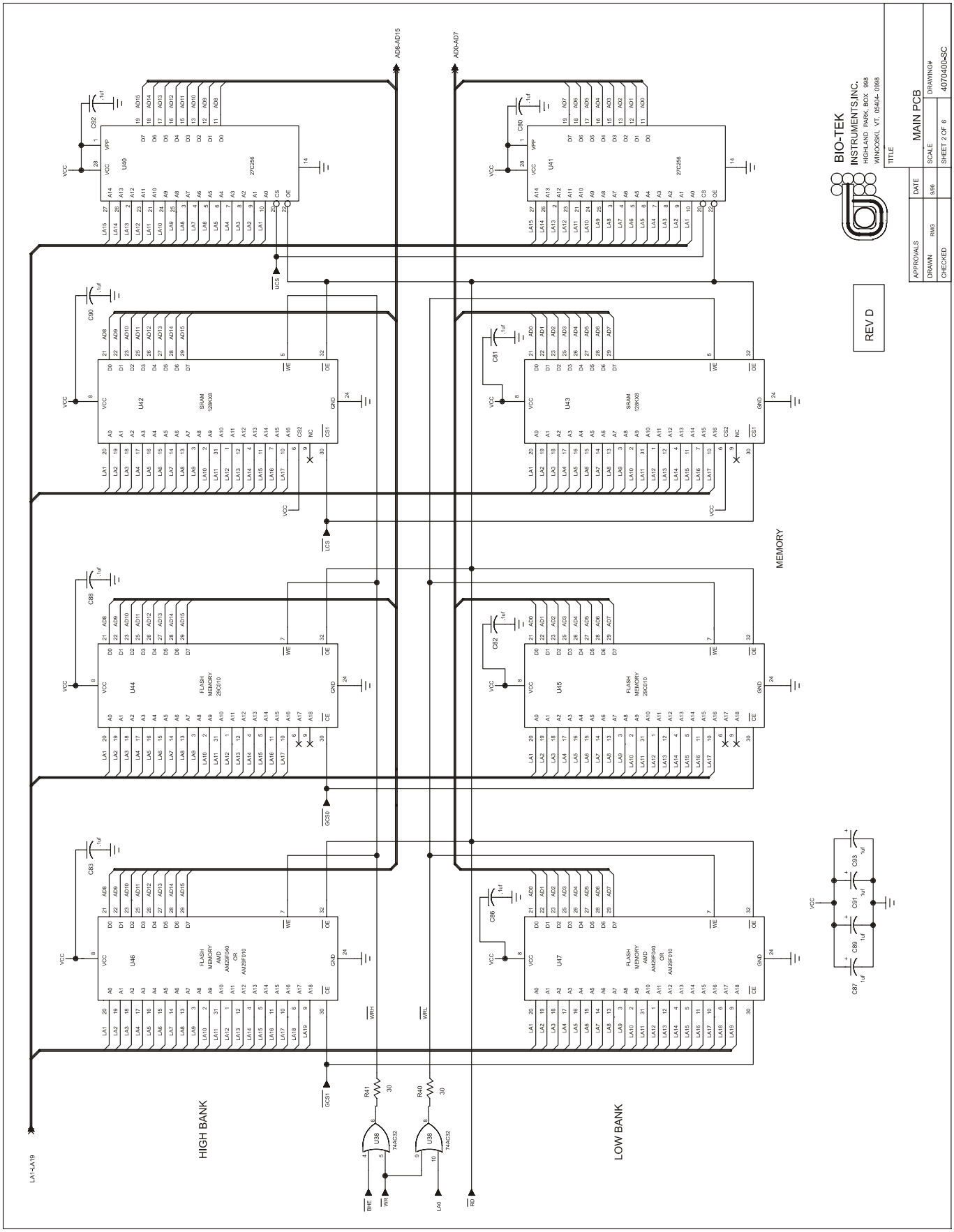
4070400-AS Main PCB

4070400 Main PCB rev E As of 11-20-00				
Item	Description	Rev	Qty	Remarks
04018	LCD 2X24 SUPERTWIST DISPLAY	E	1	DIPLAY
12089	SCR PAN 2-56X1/4 SS PHIL	A	4	TO MOUNT DISPLAY
16001	LKWSHR #2 HELICAL SPR	A	4	TO MOUNT DISPLAY
21010	DIODE IN5821 SCHOTTKY 30V 1/4W	B	2	CR4,5
21013	DIODE SF21 50V 2AMP	A	1	CR10
23099	VOLT REG LM2575S-ADJ	A	1	Q1
25108	IC LT1017CN8 COMPARATOR	A	1	U31
25135	IC 80C186-20 UP PLCC	B	1	INSTALLED IN SOCKET (U48)
25136	IC DS1233-10 ECONO RESET	A	1	Q6
25140	IC 74HC574 SOP20	A	3	U10,23,29
25141	IC 74AC32 SOP14	A	2	U37,38
25142	IC 74AC08 S0P14	A	1	U39
25143	IC 74AC373 SOP20	A	3	U34-36
25144	IC 74AC245 SOP20	A	1	U33
25145	IC 74AC138 SOP16	A	2	U28,30
25146	IC 74HC541 SOP20	A	2	U20,27
25147	IC 74LSO4 SOP14	A	1	U49
26024	IC 2003A TRANS ARRAY SM	A	1	U22
27009	MOSFET,2A 80V RFP2N08L POWER	C	1	Q2
27013	TRANSISTOR 2N7008RLRA N-CH	E	1	Q4
28004	VOLT REF 2.5	C	1	U9
28043	VOLT REF 1.2 LT1004 +/-4MV	B	1	Q5
28131	IC PBL3771QN STPR MTR DRV SM	C	3	U1-3
28133	IC LT1080 SOP18	A	1	U11
29131	TRANSZORB 33V 1.5KE33A	B	1	CR3
29137	IC PBM3960QN DUAL 7 BIT D/A SM	B	3	U6-8
29138	IC AT29C010-12TC FMEM 128K SM	B	2	U44,45
29139	IC AM29F040-120 512K FMEM SM	B	2	U46,47
29140	IC 128KX8 STATIC RAM TSOP 8X20	C	2	U42,43
35009	TRIMPOT 20K, 25T	A	1	RT1
37002	RESNET 10K OHM 5R 6P SIP	B	4	RN13-16
37007	RESNET 180 OHM 5R 10P SIP	B	3	RN3-5
37046	RESNET 10K SIP 10PIN 9RES 5%	A	6	RN6-8,10-12
38005	RES 1.00K OHM 1% SIZE 1206	D	7	R11-16,21
38026	RES 475 OHM SIZE 1206	A	1	R43
38067	RES .65 OHM 1W 1%	B	6	R3-8
38086	RES 29.4K .1% 1/8W 1206	B	1	R37
38087	RES 10.0K .1% 1/8W 1206	A	1	R38
38088	RES 30 OHM 5% 1/8W 1206	B	3	R40-42
38089	RES 3.01K OHM 1% 1/8W 1206	B	1	R32
38090	RES 2.0K OHM 1% 1/8 1206	A	1	R36
38091	RES 3.32K OHM 1% 1/8W 1206	A	1	R22
38093	RES 15.0K 1% 1/8W 1206	B	3	R18-20
38094	RES 2.49M 1% SIZE 1206	A	1	R39
4070200	FIRMWARE ASBY ELX50 V1.02	A	1	U40 HIGH, U41 LOW
4070400-AS	-MAIN PCB ASBY	D	0	DOCUMENT ONLY
4070400-SC	-MAIN PCB SCHEMATIC	D	0	DOCUMENT ONLY
4070400-TP	-MAIN PCB ASBY TEST PROCEDURE	A	0	DOCUMENT ONLY
4071400	MAIN PCB	D	1	
42112	HEDR 4-PIN DUAL	B	2	P1-P4

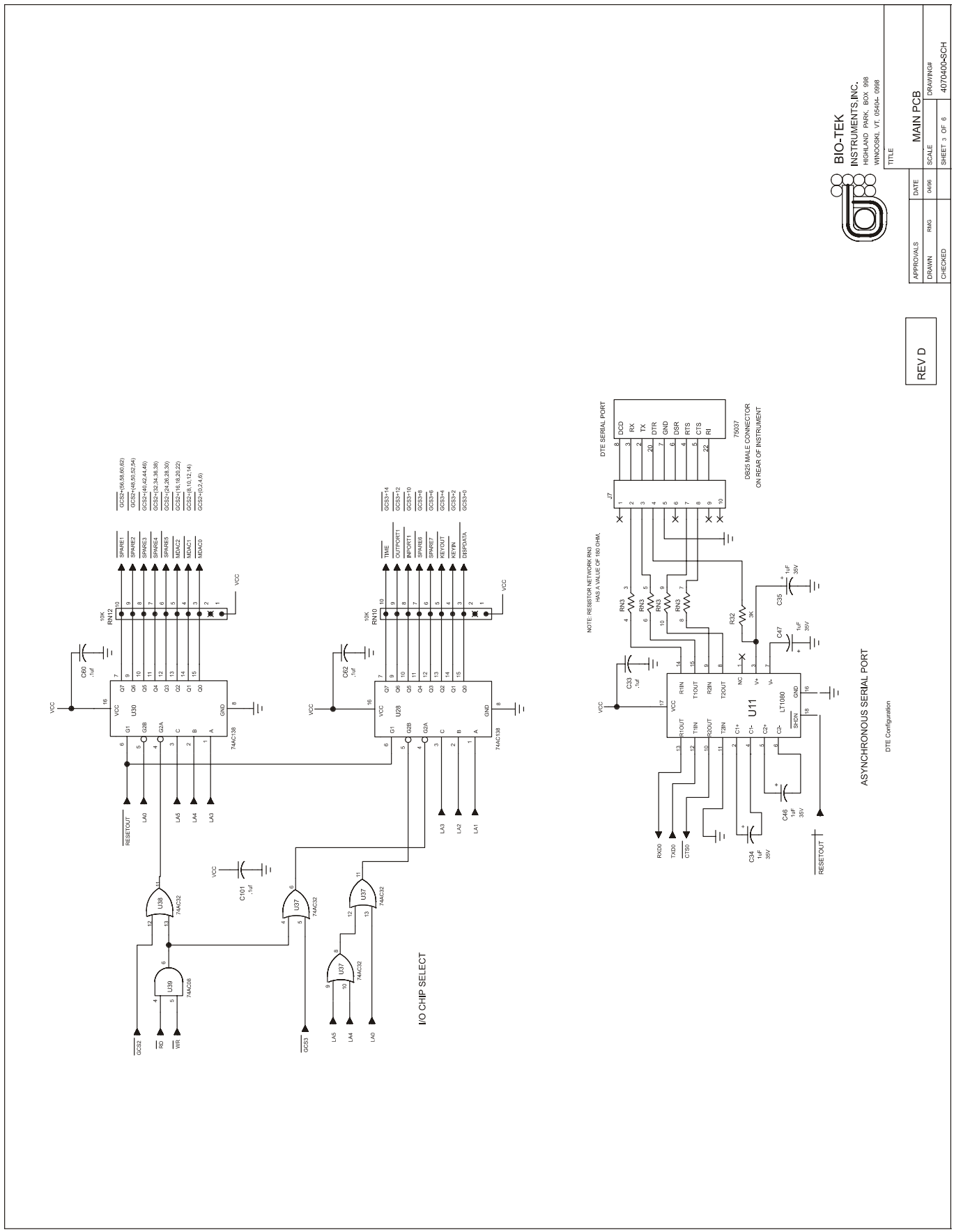
Item	Description	Rev	Qty	Remarks
42150	HEDR 12-P .100 RTANG BRKS	B	1	J6
42225	HEDR 3-P .156 LOK	A	1	J1
42307	SWAGE CONN 5/32 RND 1/4L	B	4	SWAGED INTO PCB
42310	HEDR 14PIN FOR LCD MOUNTING	A	1	J9
42311	HEDR 14PIN .1X.1 FOR LCD	B	1	MOUNTED ON DISPLAY
42319	HEDR 4-P .100 PCB MOUNT GOLD	A	2	J2,3
42324	HEDR 5-P .100 PCB MOUNT GOLD	A	2	J14,15
42468	HEDR 2-P .100 PCB MOUNT STR	A	1	J21
42626	HEDR 10PIN .1 RT ANGLE	A	1	J4
42627	HEDR 2P RT ANG LOCK POLAR	A	4	J12,13,16,20
46082	FUSE RESETABLE 5A PCB MNT	A	1	F2
49014	TERM PCB	B	1	GND
49149	SOCKET IC 28-PIN DIP	B	2	IN U40,41
49478	SOCKET 84-PIN PLCC	A	1	IN U48
49694	HEDR 10P .1	B	1	J7
49743	CRYSTAL CLOCK OSC 32 MHZ	B	1	Y2
62027	FILTER EMI SUPPR .5-1GHZ	A	1	F1
63018	INDUCTOR 220UH	A	1	L1
65020	BUZZER 3-16V PIEZO	C	1	BP1
81004	CAP 100 UF 63V ELEC	A	6	C2-6,94
81022	CAP 470 UF 35V ELEC VERTICAL	C	1	C30
81027	CAP 10000UF ELECTROLYTIC	A	2	C8,10
83054	CAP 820PF NPO 100V 10% 1206	B	10	C12,16,17,21,22,26,37,39,42,44
83062	CAP 3300PF CER 1206	A	3	C14,19,24
84040	CAP 10 UF 25V TANT SIZE 7343	A	4	C45,53,57,58
84041	CAP .1 UF 50V X7R SIZE 1206	A	36	C15,20,25,27,33,36,51,54,56,59-62,66,71-75,78,80-83,85,86,88,90,92,95-97,100-103
84066	CAP 1UF TANT 35V SIZE 3528	B	9	C34,35,46,47,65,87,89,91,93
85002	CAP .01 uF 100V 1%	G	1	C108



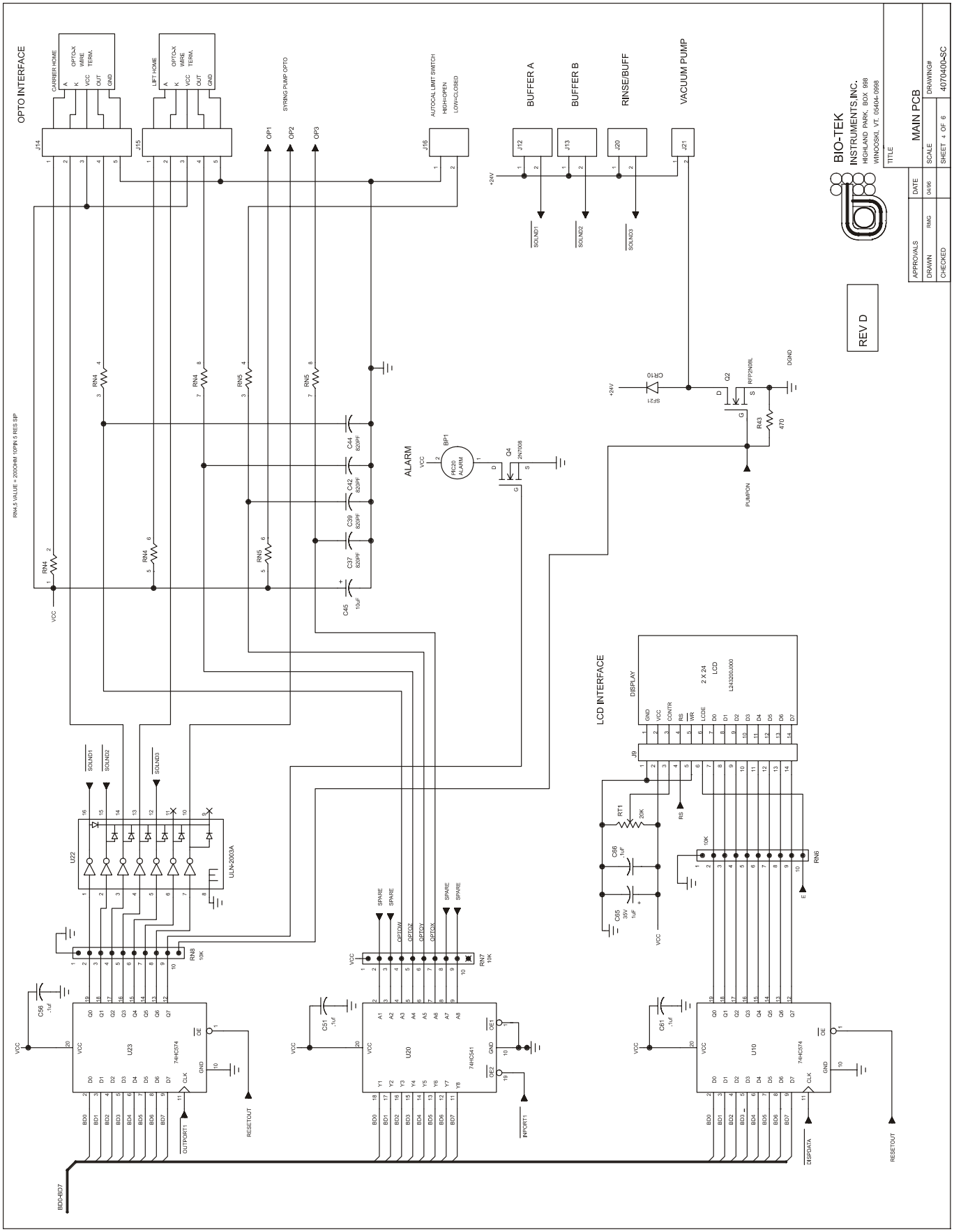
4070400-SC Main PCB (Page 1 of 6)



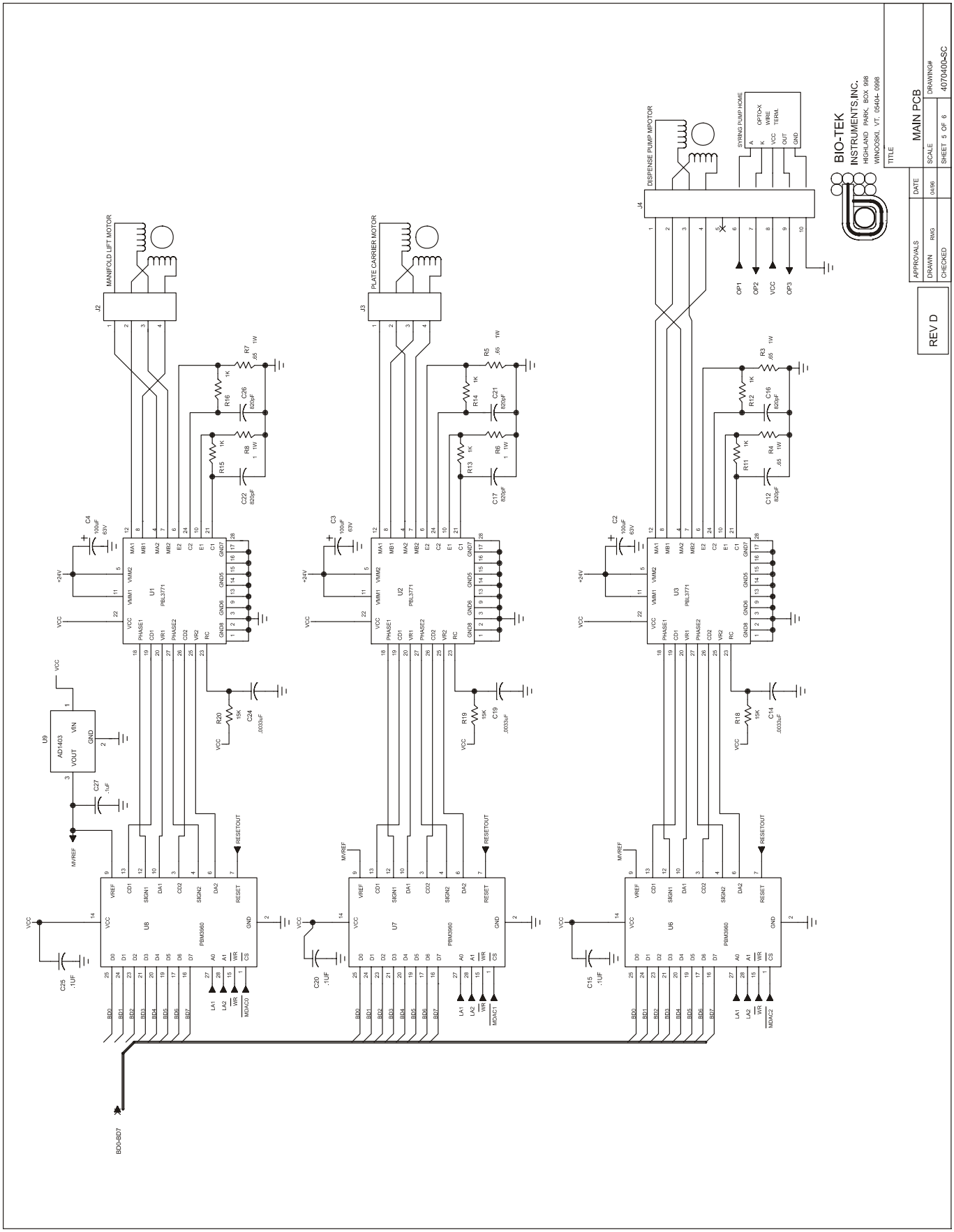
4070400-SC Main PCB (Page 2 of 6)



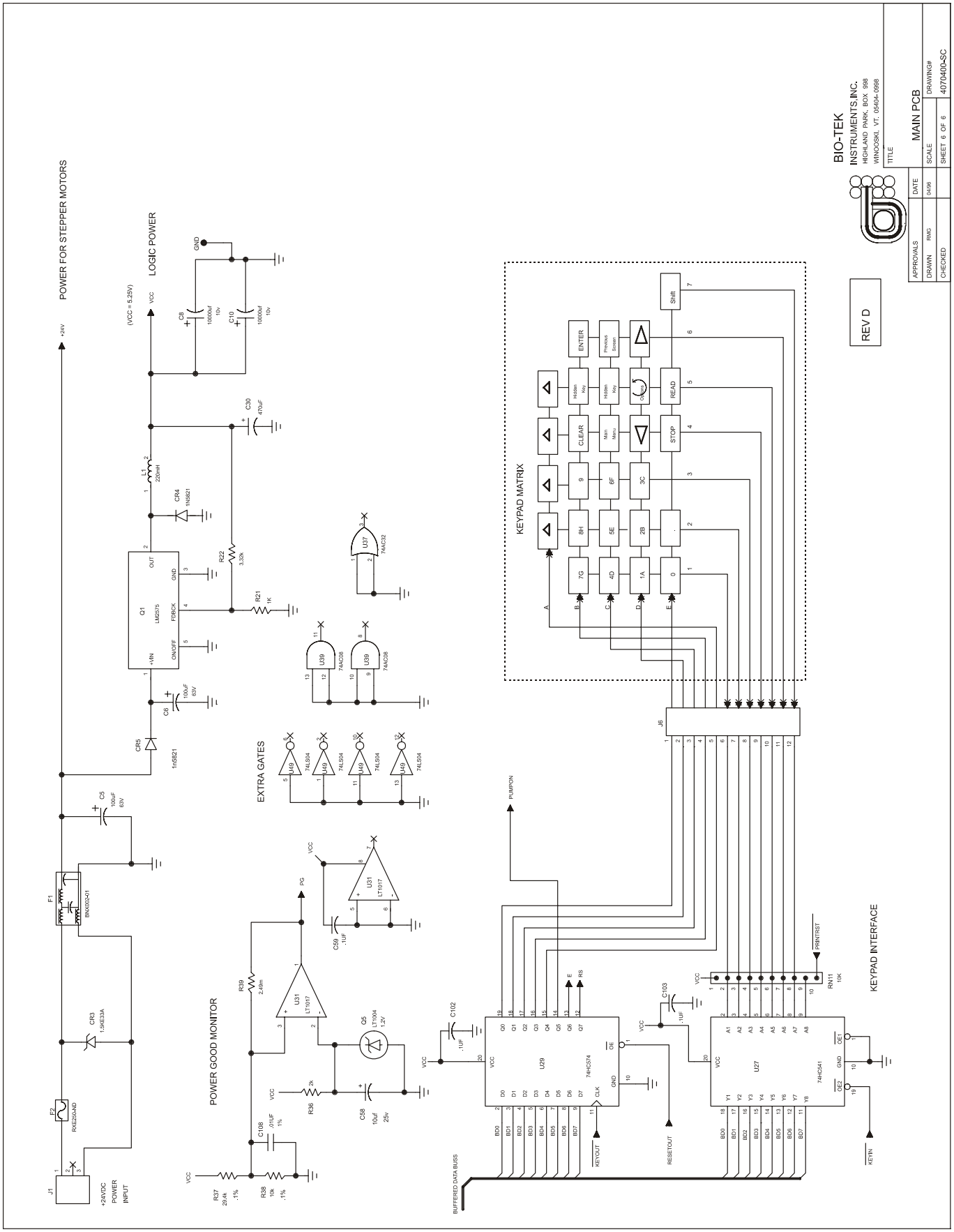
4070400-SC Main PCB (Page 3 of 6)



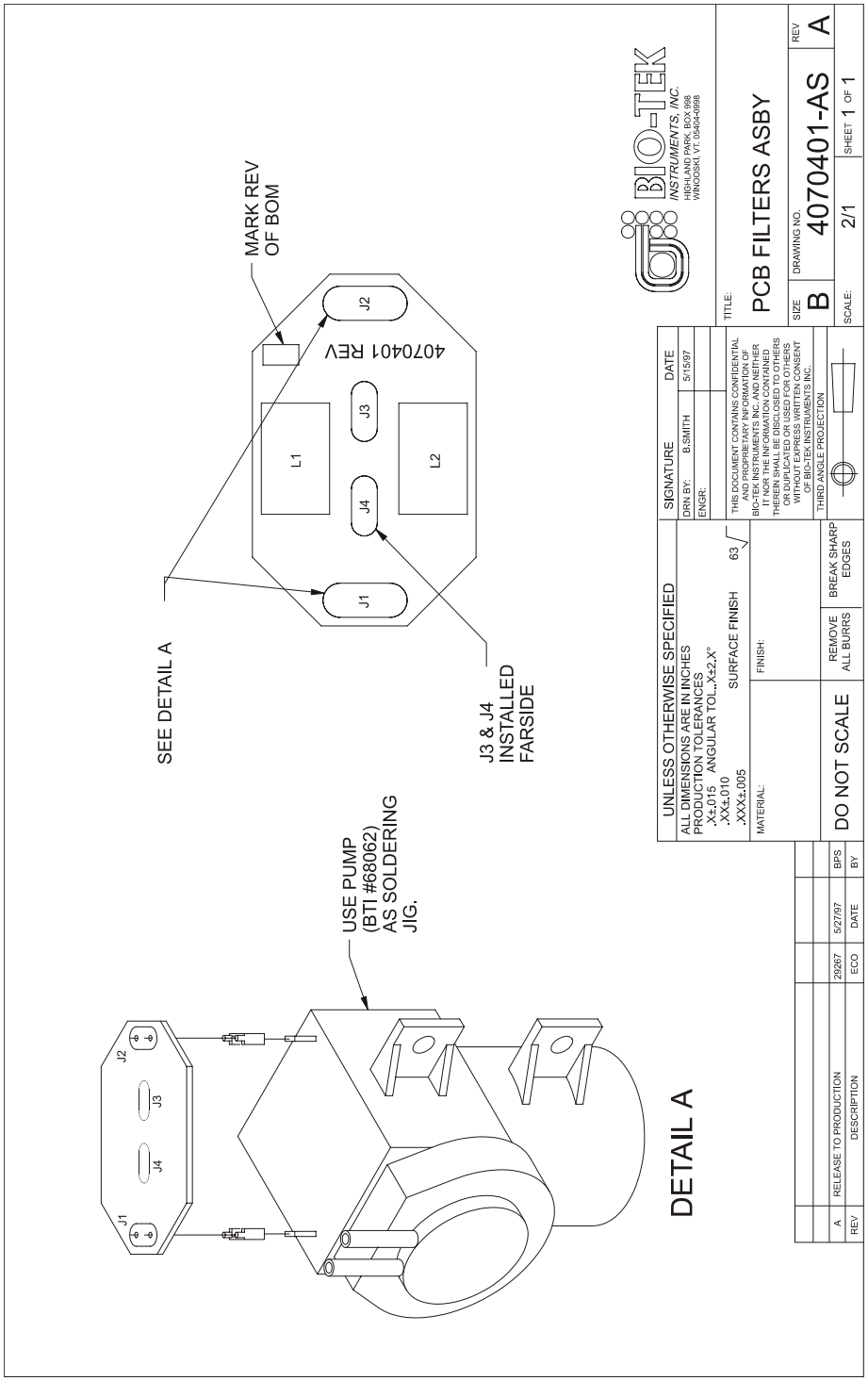
4070400-SC Main PCB (Page 4 of 6)



4070400-SC Main PCB (Page 5 of 6)

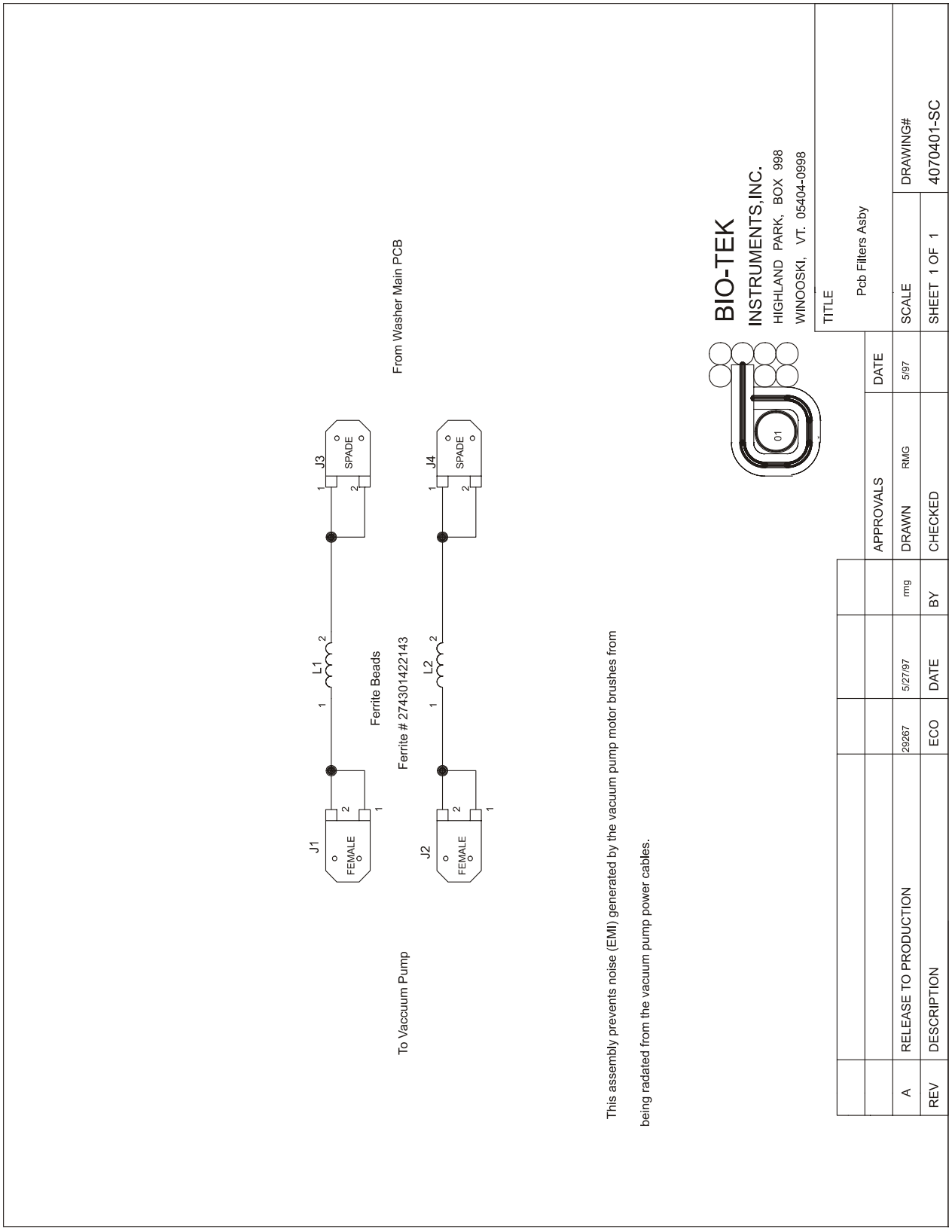


4070400-SC Main PCB (Page 6 of 6)



4070401-AS PCB Filters Assembly

4070401 PCB Filters Assembly rev A As of 11-20-00				
Item	Description	Rev	Qty	Remarks
4070401-AS	-PCB FILTERS ASBY	A	0	DOCUMENT ONLY
4070401-SC	-PCB FILTERS ASBY	A	0	DOCUMENT ONLY
4071401	PCB FILTERS	B	1	
42063	HEDR .25 MTAB	A	2	J3,4
42664	TERM FMALE .25 PC MNT	A	2	J1,2
62057	FILTER EMI BEAD 43 OHMS	A	2	L1,2
68062	COMPRESSOR DIAPH 24VDC	B	0	JIG ONLY



4070401-SC PCB Filters

Section 7

Bills of Material

This section contains the Bills of Material used in building the ELx50 Automated Microplate Strip Washer and its variations. These documents are subject to change.

PART NUMBER DESCRIPTION

ELX50/8 Strip Washer 8 Well, page 7-3
ELX50/8G Strip Washer 8 Well (Generic), page 7-4
ELX50/8V Strip Washer 8 Well w/Valves, page 7-5
ELX50/8GV Strip Washer 8 Well (Generic) w/Valves, page 7-6

ELX50/8S Strip Washer 8 Well Short Dispense, page 7-7
ELX50/8GS Strip Washer 8 Well (Generic) Short Dispense, page 7-8
ELX50/8VS Strip Washer 8 Well w/Valves, Short Dispense, page 7-9
ELX50/8GVS Strip Washer 8 Well (Generic) w/Valves, Short Dispense, page 7-10

ELX50/12 Strip Washer 12 Well, page 7-11
ELX50/12G Strip Washer 12 Well (Generic), page 7-12
ELX50/12V Strip Washer 12 Well w/Valves, page 7-13
ELX50/12GV Strip Washer 12 Well (Generic) w/Valves, page 7-14

ELX50/16 Strip Washer 16 Well, page 7-15
ELX50/16G Strip Washer 16 Well (Generic), page 7-16
ELX50/16V Strip Washer 16 Well w/Valves, page 7-17
ELX50/16GV Strip Washer 16 Well (Generic) w/Valves, page 7-18

4070001 Accessories Set, Bottles and Tubes, page 7-19
4070002 Accessories Set, Generic Unit, page 7-20
4070018 Accessories Set, 384 Unit, page 7-21
4070019 Accessories Set, 384 Generic Unit, page 7-22

4070520 Aerosol Cover Assembly, Generic, page 7-23

ELX50/8 Strip Washer 8 Well

ELX50/8 Strip Washer 8 Well rev O As of 11-20-00				
Item	Description	Rev	Qty	Remarks
4070001	ACCESSORIES	G	1	
4070003	KIT GENERIC HDW FINAL ASBY	J	1	
4070005-AS	-FINAL ASBY STRIP WSHR 8 WELL	N	0	DOCUMENT ONLY
4070020-DS	FINAL TEST PROCEDURE ELX50/16	C	0	DOCUMENT ONLY
4070020-TP	FINAL TEST PROCEDURE ELX50/16	D	0	DOCUMENT ONLY
4070230	SFTWR DOWNLOADED CODE V1.06	C	0	TOOL ONLY
4070231	SFTWR DWNLD ASSAY CONFIG V1.04	A	0	TOOL ONLY
4070512	MANIFOLD ASBY 8 WELL	B	1	
4070602	TEST STATION UQUANT QC ASSAY	B	0	TOOL ONLY
4071001	OVRLY FRONT	B	1	
4071002	OVRLY KEYBOARD	A	1	
4072001	COVER TOP	D	1	
4072500	JIG MANIFOLD ALIGNMENT	D	0	TOOL ONLY
4072501	JIG ASSEMBLY STAND	A	0	TOOL ONLY
4072505	JIG MAINIFOLD CALIBRATION	C	0	TOOL ONLY
4072513	JIG OVERLAY ALIGNMENT	A	0	TOOL ONLY
4072518	TOOL STOPPER 3 HOLE WASTE BTL	A	0	TOOL ONLY
4072519	TOOL INLET DISTRIBUTION LINE	A	0	TOOL ONLY
4072521	JIG MICROPLATE STOP ALIGN	C	0	TOOL ONLY
4072522	JIG CARRIER POSITION CHECK	A	0	TOOL ONLY
4072523	JIG FOOT ALIGN	A	0	TOOL ONLY
4072526	JIG AUTOCAL VERIFY	B	0	TOOL ONLY
49900	PLUG .437DIA HOLE NYLON BLACK	B	4	
7332501	JIG OVRLY ALIGNMENT	A	0	TOOL ONLY
7770102	LABEL "FCC COMPLIANCE"	A	1	
7771011	LABEL ETL WITHOUT UL	B	1	
7771012	TAG S/N WITH CE MARK	A	1	
8290206	SFTWR DOWNLOAD UTIL V1.42	H	0	TOOL ONLY
9001018	LABEL IN-VITRO DIAG USE	A	1	
99125	LABEL 1"X1/2" CONTINOUS	C	1	MARK WITH MODEL NUMBER

ELX50/8G Strip Washer 8 Well (Generic)

ELX50/8G Strip Washer 8 Well (Generic) rev P As of 11-20-00				
Item	Description	Rev	Qty	Remarks
4070002	ACCESSORIES GENERIC UNIT	G	1	
4070003	KIT GENERIC HDW FINAL ASBY	J	1	
4070005-AS	-FINAL ASBY STRIP WSHR 8 WELL	N	0	DOCUMENT ONLY
4070020-DS	FINAL TEST PROCEDURE ELX50/16	C	0	DOCUMENT ONLY
4070020-TP	FINAL TEST PROCEDURE ELX50/16	D	0	DOCUMENT ONLY
4070230	SFTWR DOWNLOADED CODE V1.06	C	0	TOOL ONLY
4070232	SFTWR GENERIC ASSAY V1.04	A	0	TOOL ONLY
4070512	MANIFOLD ASBY 8 WELL	B	1	
4070602	TEST STATION UQUANT QC ASSAY	B	0	TOOL ONLY
4071003	OVRLY KEYBOARD GENERIC	B	1	
4072040	COVER TOP GENERIC	D	1	
4072500	JIG MANIFOLD ALIGNMENT	D	0	TOOL ONLY
4072501	JIG ASSEMBLY STAND	A	0	TOOL ONLY
4072505	JIG MAINIFOLD CALIBRATION	C	0	TOOL ONLY
4072513	JIG OVERLAY ALIGNMENT	A	0	TOOL ONLY
4072518	TOOL STOPPER 3 HOLE WASTE BTL	A	0	TOOL ONLY
4072519	TOOL INLET DISTRIBUTION LINE	A	0	TOOL ONLY
4072521	JIG MICROPLATE STOP ALIGN	C	0	TOOL ONLY
4072522	JIG CARRIER POSITION CHECK	A	0	TOOL ONLY
4072523	JIG FOOT ALIGN	A	0	TOOL ONLY
4072526	JIG AUTOCAL VERIFY	B	0	TOOL ONLY
49900	PLUG .437DIA HOLE NYLON BLACK	B	4	
7332501	JIG OVRLY ALIGNMENT	A	0	TOOL ONLY
7770102	LABEL "FCC COMPLIANCE"	A	1	
7771011	LABEL ETL WITHOUT UL	B	1	
7771012	TAG S/N WITH CE MARK	A	1	
8290206	SFTWR DOWNLOAD UTIL V1.42	H	0	TOOL ONLY
9001018	LABEL IN-VITRO DIAG USE	A	1	
99125	LABEL 1"X1/2" CONTINOUS	C	1	MARK WITH MODEL NUMBER

ELX50/8V Strip Washer 8 Well w/Valves

ELX50/8V Strip Washer 8 Well w/Valves rev R As of 11-20-00				
Item	Description	Rev	Qty	Remarks
4070001	ACCESSORIES	G	1	
4070003	KIT GENERIC HDW FINAL ASBY	J	1	
4070005-AS	-FINAL ASBY STRIP WSHR 8 WELL	N	0	DOCUMENT ONLY
4070020-DS	FINAL TEST PROCEDURE ELX50/16	C	0	DOCUMENT ONLY
4070020-TP	FINAL TEST PROCEDURE ELX50/16	D	0	DOCUMENT ONLY
4070230	SFTWR DOWNLOADED CODE V1.06	C	0	TOOL ONLY
4070231	SFTWR DWNLD ASSAY CONFIG V1.04	A	0	TOOL ONLY
4070512	MANIFOLD ASBY 8 WELL	B	1	
4070515	BOTTLE SUPPLY ASBY	B	1	
4070522	KIT,SUPPLY TUBE VLVE OPT ABY	C	1	
4070602	TEST STATION UQUANT QC ASSAY	B	0	TOOL ONLY
4071001	OVRLY FRONT	B	1	
4071002	OVRLY KEYBOARD	A	1	
4072001	COVER TOP	D	1	
4072500	JIG MANIFOLD ALIGNMENT	D	0	TOOL ONLY
4072501	JIG ASSEMBLY STAND	A	0	TOOL ONLY
4072505	JIG MAINIFOLD CALIBRATION	C	0	TOOL ONLY
4072513	JIG OVERLAY ALIGNMENT	A	0	TOOL ONLY
4072518	TOOL STOPPER 3 HOLE WASTE BTL	A	0	TOOL ONLY
4072519	TOOL INLET DISTRIBUTION LINE	A	0	TOOL ONLY
4072521	JIG MICROPLATE STOP ALIGN	C	0	TOOL ONLY
4072522	JIG CARRIER POSITION CHECK	A	0	TOOL ONLY
4072523	JIG FOOT ALIGN	A	0	TOOL ONLY
4072526	JIG AUTOCAL VERIFY	B	0	TOOL ONLY
7332501	JIG OVRLY ALIGNMENT	A	0	TOOL ONLY
7770102	LABEL "FCC COMPLIANCE"	A	1	
7771011	LABEL ETL WITHOUT UL	B	1	
7771012	TAG S/N WITH CE MARK	A	1	
8290206	SFTWR DOWNLOAD UTIL V1.42	H	0	TOOL ONLY
9001018	LABEL IN-VITRO DIAG USE	A	1	
99125	LABEL 1"X1/2" CONTINOUS	C	1	MARK WITH MODEL NUMBER

ELX50/8GV Strip Washer 8 Well (Generic) w/Valves

ELX50/8GV Strip Washer 8 Well Generic w/Valves rev R As of 11-20-00				
Item	Description	Rev	Qty	Remarks
4070002	ACCESSORIES GENERIC UNIT	G	1	
4070003	KIT GENERIC HDW FINAL ASBY	J	1	
4070005-AS	-FINAL ASBY STRIP WSHR 8 WELL	N	0	DOCUMENT ONLY
4070020-DS	FINAL TEST PROCEDURE ELX50/16	C	0	DOCUMENT ONLY
4070020-TP	FINAL TEST PROCEDURE ELX50/16	D	0	DOCUMENT ONLY
4070230	SFTWR DOWNLOADED CODE V1.06	C	0	TOOL ONLY
4070232	SFTWR GENERIC ASSAY V1.04	A	0	TOOL ONLY
4070512	MANIFOLD ASBY 8 WELL	B	1	
4070515	BOTTLE SUPPLY ASBY	B	1	
4070522	KIT,SUPPLY TUBE VLVE OPT ABY	C	1	
4070602	TEST STATION UQUANT QC ASSAY	B	0	TOOL ONLY
4071003	OVRLY KEYBOARD GENERIC	B	1	
4072040	COVER TOP GENERIC	D	1	
4072500	JIG MANIFOLD ALIGNMENT	D	0	TOOL ONLY
4072501	JIG ASSEMBLY STAND	A	0	TOOL ONLY
4072505	JIG MAINIFOLD CALIBRATION	C	0	TOOL ONLY
4072513	JIG OVERLAY ALIGNMENT	A	0	TOOL ONLY
4072518	TOOL STOPPER 3 HOLE WASTE BTL	A	0	TOOL ONLY
4072519	TOOL INLET DISTRIBUTION LINE	A	0	TOOL ONLY
4072521	JIG MICROPLATE STOP ALIGN	C	0	TOOL ONLY
4072522	JIG CARRIER POSITION CHECK	A	0	TOOL ONLY
4072523	JIG FOOT ALIGN	A	0	TOOL ONLY
4072526	JIG AUTOCAL VERIFY	B	0	TOOL ONLY
7332501	JIG OVRLY ALIGNMENT	A	0	TOOL ONLY
7770102	LABEL "FCC COMPLIANCE"	A	1	
7771011	LABEL ETL WITHOUT UL	B	1	
7771012	TAG S/N WITH CE MARK	A	1	
8290206	SFTWR DOWNLOAD UTIL V1.42	H	0	TOOL ONLY
9001018	LABEL IN-VITRO DIAG USE	A	1	
99125	LABEL 1"X1/2" CONTINOUS	C	1	MARK WITH MODEL NUMBER

ELX50/8S Strip Washer 8 Well Short Dispense

ELX50/8S Strip Washer 8 Well Short Dispense rev P As of 11-20-00				
Item	Description	Rev	Qty	Remarks
4070001	ACCESSORIES	G	1	
4070003	KIT GENERIC HDW FINAL ASBY	J	1	
4070005-AS	-FINAL ASBY STRIP WSHR 8 WELL	N	0	DOCUMENT ONLY
4070020-DS	FINAL TEST PROCEDURE ELX50/16	C	0	DOCUMENT ONLY
4070020-TP	FINAL TEST PROCEDURE ELX50/16	D	0	DOCUMENT ONLY
4070230	SFTWR DOWNLOADED CODE V1.06	C	0	TOOL ONLY
4070231	SFTWR DWNLD ASSAY CONFIG V1.04	A	0	TOOL ONLY
4070519	MANF 8 WELL SHORT DISP ASBY	A	1	
4070602	TEST STATION UQUANT QC ASSAY	B	0	TOOL ONLY
4071001	OVRLY FRONT	B	1	
4071002	OVRLY KEYBOARD	A	1	
4072001	COVER TOP	D	1	
4072500	JIG MANIFOLD ALIGNMENT	D	0	TOOL ONLY
4072501	JIG ASSEMBLY STAND	A	0	TOOL ONLY
4072505	JIG MAINIFOLD CALIBRATION	C	0	TOOL ONLY
4072513	JIG OVERLAY ALIGNMENT	A	0	TOOL ONLY
4072518	TOOL STOPPER 3 HOLE WASTE BTL	A	0	TOOL ONLY
4072519	TOOL INLET DISTRIBUTION LINE	A	0	TOOL ONLY
4072521	JIG MICROPLATE STOP ALIGN	C	0	TOOL ONLY
4072522	JIG CARRIER POSITION CHECK	A	0	TOOL ONLY
4072523	JIG FOOT ALIGN	A	0	TOOL ONLY
4072526	JIG AUTOCAL VERIFY	B	0	TOOL ONLY
49900	PLUG .437DIA HOLE NYLON BLACK	B	4	
7332501	JIG OVRLY ALIGNMENT	A	0	TOOL ONLY
7770102	LABEL "FCC COMPLIANCE"	A	1	
7771011	LABEL ETL WITHOUT UL	B	1	
7771012	TAG S/N WITH CE MARK	A	1	
8290206	SFTWR DOWNLOAD UTIL V1.42	H	0	TOOL ONLY
9001018	LABEL IN-VITRO DIAG USE	A	1	
99125	LABEL 1"X1/2" CONTINOUS	C	1	MARK WITH MODEL NUMBER

ELX50/8GS Strip Washer 8 Well (Generic) Short Dispense

ELX50/8GS Strip Washer 8 Well (Generic) Short Dispense rev P As of 11-20-00				
Item	Description	Rev	Qty	Remarks
4070002	ACCESSORIES GENERIC UNIT	G	1	
4070003	KIT GENERIC HDW FINAL ASBY	J	1	
4070005-AS	-FINAL ASBY STRIP WSHR 8 WELL	N	0	DOCUMENT ONLY
4070020-DS	FINAL TEST PROCEDURE ELX50/16	C	0	DOCUMENT ONLY
4070020-TP	FINAL TEST PROCEDURE ELX50/16	D	0	DOCUMENT ONLY
4070230	SFTWR DOWNLOADED CODE V1.06	C	0	TOOL ONLY
4070232	SFTWR GENERIC ASSAY V1.04	A	0	TOOL ONLY
4070519	MANF 8 WELL SHORT DISP ASBY	A	1	
4070602	TEST STATION UQUANT QC ASSAY	B	0	TOOL ONLY
4071003	OVRLY KEYBOARD GENERIC	B	1	
4072040	COVER TOP GENERIC	D	1	
4072500	JIG MANIFOLD ALIGNMENT	D	0	TOOL ONLY
4072501	JIG ASSEMBLY STAND	A	0	TOOL ONLY
4072505	JIG MAINIFOLD CALIBRATION	C	0	TOOL ONLY
4072513	JIG OVERLAY ALIGNMENT	A	0	TOOL ONLY
4072518	TOOL STOPPER 3 HOLE WASTE BTL	A	0	TOOL ONLY
4072519	TOOL INLET DISTRIBUTION LINE	A	0	TOOL ONLY
4072521	JIG MICROPLATE STOP ALIGN	C	0	TOOL ONLY
4072522	JIG CARRIER POSITION CHECK	A	0	TOOL ONLY
4072523	JIG FOOT ALIGN	A	0	TOOL ONLY
4072526	JIG AUTOCAL VERIFY	B	0	TOOL ONLY
49900	PLUG .437DIA HOLE NYLON BLACK	B	4	
7332501	JIG OVRLY ALIGNMENT	A	0	TOOL ONLY
7770102	LABEL "FCC COMPLIANCE"	A	1	
7771011	LABEL ETL WITHOUT UL	B	1	
7771012	TAG S/N WITH CE MARK	A	1	
8290206	SFTWR DOWNLOAD UTIL V1.42	H	0	TOOL ONLY
9001018	LABEL IN-VITRO DIAG USE	A	1	
99125	LABEL 1"X1/2" CONTINOUS	C	1	MARK WITH MODEL NUMBER

ELX50/8VS Strip Washer 8 Well w/Valves, Short Dispense

ELX50/8VS Strip Washer 8 Well w/Valves, Short Dispense rev R As of 11-20-00				
Item	Description	Rev	Qty	Remarks
4070001	ACCESSORIES	G	1	
4070003	KIT GENERIC HDW FINAL ASBY	J	1	
4070005-AS	-FINAL ASBY STRIP WSHR 8 WELL	N	0	DOCUMENT ONLY
4070020-DS	FINAL TEST PROCEDURE ELX50/16	C	0	DOCUMENT ONLY
4070020-TP	FINAL TEST PROCEDURE ELX50/16	D	0	DOCUMENT ONLY
4070230	SFTWR DOWNLOADED CODE V1.06	C	0	TOOL ONLY
4070231	SFTWR DWNLD ASSAY CONFIG V1.04	A	0	TOOL ONLY
4070515	BOTTLE SUPPLY ASBY	B	1	
4070519	MANF 8 WELL SHORT DISP ASBY	A	1	
4070522	KIT,SUPPLY TUBE VLVE OPT ABY	C	1	
4070602	TEST STATION UQUANT QC ASSAY	B	0	TOOL ONLY
4071001	OVRLY FRONT	B	1	
4071002	OVRLY KEYBOARD	A	1	
4072001	COVER TOP	D	1	
4072500	JIG MANIFOLD ALIGNMENT	D	0	TOOL ONLY
4072501	JIG ASSEMBLY STAND	A	0	TOOL ONLY
4072505	JIG MAINIFOLD CALIBRATION	C	0	TOOL ONLY
4072513	JIG OVERLAY ALIGNMENT	A	0	TOOL ONLY
4072518	TOOL STOPPER 3 HOLE WASTE BTL	A	0	TOOL ONLY
4072519	TOOL INLET DISTRIBUTION LINE	A	0	TOOL ONLY
4072521	JIG MICROPLATE STOP ALIGN	C	0	TOOL ONLY
4072522	JIG CARRIER POSITION CHECK	A	0	TOOL ONLY
4072523	JIG FOOT ALIGN	A	0	TOOL ONLY
4072526	JIG AUTOCAL VERIFY	B	0	TOOL ONLY
7332501	JIG OVRLY ALIGNMENT	A	0	TOOL ONLY
7770102	LABEL "FCC COMPLIANCE"	A	1	
7771011	LABEL ETL WITHOUT UL	B	1	
7771012	TAG S/N WITH CE MARK	A	1	
8290206	SFTWR DOWNLOAD UTIL V1.42	H	0	TOOL ONLY
9001018	LABEL IN-VITRO DIAG USE	A	1	
99125	LABEL 1"X1/2" CONTINOUS	C	1	

ELX50/8GVS Strip Washer 8 Well (Generic) w/Valves, Short Dispense

ELX50/8GVS Strip Washer 8 Well (Generic) w/Valves, Short Dispense rev R As of 11-20-00				
Item	Description	Rev	Qty	Remarks
4070002	ACCESSORIES GENERIC UNIT	G	1	
4070003	KIT GENERIC HDW FINAL ASBY	J	1	
4070005-AS	-FINAL ASBY STRIP WSHR 8 WELL	N	0	DOCUMENT ONLY
4070020-DS	FINAL TEST PROCEDURE ELX50/16	C	0	DOCUMENT ONLY
4070020-TP	FINAL TEST PROCEDURE ELX50/16	D	0	DOCUMENT ONLY
4070230	SFTWR DOWNLOADED CODE V1.06	C	0	TOOL ONLY
4070232	SFTWR GENERIC ASSAY V1.04	A	0	TOOL ONLY
4070515	BOTTLE SUPPLY ASBY	B	1	
4070519	MANF 8 WELL SHORT DISP ASBY	A	1	
4070522	KIT,SUPPLY TUBE VLVE OPT ABY	C	1	
4070602	TEST STATION UQUANT QC ASSAY	B	0	TOOL ONLY
4071003	OVRLY KEYBOARD GENERIC	B	1	
4072040	COVER TOP GENERIC	D	1	
4072500	JIG MANIFOLD ALIGNMENT	D	0	TOOL ONLY
4072501	JIG ASSEMBLY STAND	A	0	TOOL ONLY
4072505	JIG MAINIFOLD CALIBRATION	C	0	TOOL ONLY
4072513	JIG OVERLAY ALIGNMENT	A	0	TOOL ONLY
4072518	TOOL STOPPER 3 HOLE WASTE BTL	A	0	TOOL ONLY
4072519	TOOL INLET DISTRIBUTION LINE	A	0	TOOL ONLY
4072521	JIG MICROPLATE STOP ALIGN	C	0	TOOL ONLY
4072522	JIG CARRIER POSITION CHECK	A	0	TOOL ONLY
4072523	JIG FOOT ALIGN	A	0	TOOL ONLY
4072526	JIG AUTOCAL VERIFY	B	0	TOOL ONLY
7332501	JIG OVRLY ALIGNMENT	A	0	TOOL ONLY
7770102	LABEL "FCC COMPLIANCE"	A	1	
7771011	LABEL ETL WITHOUT UL	B	1	
7771012	TAG S/N WITH CE MARK	A	1	
8290206	SFTWR DOWNLOAD UTIL V1.42	H	0	TOOL ONLY
9001018	LABEL IN-VITRO DIAG USE	A	1	
99125	LABEL 1"X1/2" CONTINOUS	C	1	MARK WITH MODEL NUMBER

ELX50/12 Strip Washer 12 Well

ELX50/12 Strip Washer 12 Well rev P As of 11-20-00				
Item	Description	Rev	Qty	Remarks
4070001	ACCESSORIES	G	1	
4070003	KIT GENERIC HDW FINAL ASBY	J	1	
4070005-AS	-FINAL ASBY STRIP WSHR 8 WELL	N	0	DOCUMENT ONLY
4070020-DS	FINAL TEST PROCEDURE ELX50/16	C	0	DOCUMENT ONLY
4070020-TP	FINAL TEST PROCEDURE ELX50/16	D	0	DOCUMENT ONLY
4070230	SFTWR DOWNLOADED CODE V1.06	C	0	TOOL ONLY
4070231	SFTWR DWNLD ASSAY CONFIG V1.04	A	0	TOOL ONLY
4070513	MANIFOLD ASBY 12 WELL	B	1	
4070602	TEST STATION UQUANT QC ASSAY	B	0	TOOL ONLY
4071001	OVRLY FRONT	B	1	
4071002	OVRLY KEYBOARD	A	1	
4072001	COVER TOP	D	1	
4072500	JIG MANIFOLD ALIGNMENT	D	0	TOOL ONLY
4072501	JIG ASSEMBLY STAND	A	0	TOOL ONLY
4072505	JIG MAINIFOLD CALIBRATION	C	0	TOOL ONLY
4072513	JIG OVERLAY ALIGNMENT	A	0	TOOL ONLY
4072518	TOOL STOPPER 3 HOLE WASTE BTL	A	0	TOOL ONLY
4072519	TOOL INLET DISTRIBUTION LINE	A	0	TOOL ONLY
4072521	JIG MICROPLATE STOP ALIGN	C	0	TOOL ONLY
4072522	JIG CARRIER POSITION CHECK	A	0	TOOL ONLY
4072523	JIG FOOT ALIGN	A	0	TOOL ONLY
4072526	JIG AUTOCAL VERIFY	B	0	TOOL ONLY
49900	PLUG .437DIA HOLE NYLON BLACK	B	4	
7332501	JIG OVRLY ALIGNMENT	A	0	TOOL ONLY
7770102	LABEL "FCC COMPLIANCE"	A	1	
7771011	LABEL ETL WITHOUT UL	B	1	
7771012	TAG S/N WITH CE MARK	A	1	
8290206	SFTWR DOWNLOAD UTIL V1.42	H	0	TOOL ONLY
9001018	LABEL IN-VITRO DIAG USE	A	1	
99125	LABEL 1"X1/2" CONTINOUS	C	1	MARK WITH MODEL NUMBER

ELX50/12G Strip Washer 12 Well (Generic)

ELX50/12G Strip Washer 12 Well (Generic) rev P As of 11-20-00				
Item	Description	Rev	Qty	Remarks
4070002	ACCESSORIES GENERIC UNIT	G	1	
4070003	KIT GENERIC HDW FINAL ASBY	J	1	
4070005-AS	-FINAL ASBY STRIP WSHR 8 WELL	N	0	DOCUMENT ONLY
4070020-DS	FINAL TEST PROCEDURE ELX50/16	C	0	DOCUMENT ONLY
4070020-TP	FINAL TEST PROCEDURE ELX50/16	D	0	DOCUMENT ONLY
4070230	SFTWR DOWNLOADED CODE V1.06	C	0	TOOL ONLY
4070232	SFTWR GENERIC ASSAY V1.04	A	0	TOOL ONLY
4070513	MANIFOLD ASBY 12 WELL	B	1	
4070602	TEST STATION UQUANT QC ASSAY	B	0	TOOL ONLY
4071003	OVRLY KEYBOARD GENERIC	B	1	
4072040	COVER TOP GENERIC	D	1	
4072500	JIG MANIFOLD ALIGNMENT	D	0	TOOL ONLY
4072501	JIG ASSEMBLY STAND	A	0	TOOL ONLY
4072505	JIG MAINIFOLD CALIBRATION	C	0	TOOL ONLY
4072513	JIG OVERLAY ALIGNMENT	A	0	TOOL ONLY
4072518	TOOL STOPPER 3 HOLE WASTE BTL	A	0	TOOL ONLY
4072519	TOOL INLET DISTRIBUTION LINE	A	0	TOOL ONLY
4072521	JIG MICROPLATE STOP ALIGN	C	0	TOOL ONLY
4072522	JIG CARRIER POSITION CHECK	A	0	TOOL ONLY
4072523	JIG FOOT ALIGN	A	0	TOOL ONLY
4072526	JIG AUTOCAL VERIFY	B	0	TOOL ONLY
49900	PLUG .437DIA HOLE NYLON BLACK	B	4	
7332501	JIG OVRLY ALIGNMENT	A	0	TOOL ONLY
7770102	LABEL "FCC COMPLIANCE"	A	1	
7771011	LABEL ETL WITHOUT UL	B	1	
7771012	TAG S/N WITH CE MARK	A	1	
8290206	SFTWR DOWNLOAD UTIL V1.42	H	0	TOOL ONLY
9001018	LABEL IN-VITRO DIAG USE	A	1	
99125	LABEL 1"X1/2" CONTINOUS	C	1	MARK WITH MODEL NUMBER

ELX50/12V Strip Washer 12 Well w/Valves

ELX50/12V Strip Washer 12 Well w/Valves rev R As of 11-20-00				
Item	Description	Rev	Qty	Remarks
4070001	ACCESSORIES	G	1	
4070003	KIT GENERIC HDW FINAL ASBY	J	1	
4070005-AS	-FINAL ASBY STRIP WSHR 8 WELL	N	0	DOCUMENT ONLY
4070020-DS	FINAL TEST PROCEDURE ELX50/16	C	0	DOCUMENT ONLY
4070020-TP	FINAL TEST PROCEDURE ELX50/16	D	0	DOCUMENT ONLY
4070230	SFTWR DOWNLOADED CODE V1.06	C	0	TOOL ONLY
4070231	SFTWR DWNLD ASSAY CONFIG V1.04	A	0	TOOL ONLY
4070513	MANIFOLD ASBY 12 WELL	B	1	
4070515	BOTTLE SUPPLY ASBY	B	1	
4070522	KIT,SUPPLY TUBE VLVE OPT ABY	C	1	
4070602	TEST STATION UQUANT QC ASSAY	B	0	TOOL ONLY
4071001	OVRLY FRONT	B	1	
4071002	OVRLY KEYBOARD	A	1	
4072001	COVER TOP	D	1	
4072500	JIG MANIFOLD ALIGNMENT	D	0	TOOL ONLY
4072501	JIG ASSEMBLY STAND	A	0	TOOL ONLY
4072505	JIG MAINIFOLD CALIBRATION	C	0	TOOL ONLY
4072513	JIG OVERLAY ALIGNMENT	A	0	TOOL ONLY
4072518	TOOL STOPPER 3 HOLE WASTE BTL	A	0	TOOL ONLY
4072519	TOOL INLET DISTRIBUTION LINE	A	0	TOOL ONLY
4072521	JIG MICROPLATE STOP ALIGN	C	0	TOOL ONLY
4072522	JIG CARRIER POSITION CHECK	A	0	TOOL ONLY
4072523	JIG FOOT ALIGN	A	0	TOOL ONLY
4072526	JIG AUTOCAL VERIFY	B	0	TOOL ONLY
7332501	JIG OVRLY ALIGNMENT	A	0	TOOL ONLY
7770102	LABEL "FCC COMPLIANCE"	A	1	
7771011	LABEL ETL WITHOUT UL	B	1	
7771012	TAG S/N WITH CE MARK	A	1	
8290206	SFTWR DOWNLOAD UTIL V1.42	H	0	TOOL ONLY
9001018	LABEL IN-VITRO DIAG USE	A	1	
99125	LABEL 1"X1/2" CONTINOUS	C	1	MARK WITH MODEL NUMBER

ELX50/12GV Strip Washer 12 Well (Generic) w/Valves

ELX50/12GV Strip Washer 12 Well (Generic) w/Valves rev R As of 11-20-00				
Item	Description	Rev	Qty	Remarks
4070002	ACCESSORIES GENERIC UNIT	G	1	
4070003	KIT GENERIC HDW FINAL ASBY	J	1	
4070005-AS	-FINAL ASBY STRIP WSHR 8 WELL	N	0	DOCUMENT ONLY
4070020-DS	FINAL TEST PROCEDURE ELX50/16	C	0	DOCUMENT ONLY
4070020-TP	FINAL TEST PROCEDURE ELX50/16	D	0	DOCUMENT ONLY
4070230	SFTWR DOWNLOADED CODE V1.06	C	0	TOOL ONLY
4070232	SFTWR GENERIC ASSAY V1.04	A	0	TOOL ONLY
4070513	MANIFOLD ASBY 12 WELL	B	1	
4070515	BOTTLE SUPPLY ASBY	B	1	
4070522	KIT,SUPPLY TUBE VLVE OPT ABY	C	1	
4070602	TEST STATION UQUANT QC ASSAY	B	0	TOOL ONLY
4071003	OVRLY KEYBOARD GENERIC	B	1	
4072040	COVER TOP GENERIC	D	1	
4072500	JIG MANIFOLD ALIGNMENT	D	0	TOOL ONLY
4072501	JIG ASSEMBLY STAND	A	0	TOOL ONLY
4072505	JIG MAINIFOLD CALIBRATION	C	0	TOOL ONLY
4072513	JIG OVERLAY ALIGNMENT	A	0	TOOL ONLY
4072518	TOOL STOPPER 3 HOLE WASTE BTL	A	0	TOOL ONLY
4072519	TOOL INLET DISTRIBUTION LINE	A	0	TOOL ONLY
4072521	JIG MICROPLATE STOP ALIGN	C	0	TOOL ONLY
4072522	JIG CARRIER POSITION CHECK	A	0	TOOL ONLY
4072523	JIG FOOT ALIGN	A	0	TOOL ONLY
4072526	JIG AUTOCAL VERIFY	B	0	TOOL ONLY
7332501	JIG OVRLY ALIGNMENT	A	0	TOOL ONLY
7770102	LABEL "FCC COMPLIANCE"	A	1	
7771011	LABEL ETL WITHOUT UL	B	1	
7771012	TAG S/N WITH CE MARK	A	1	
8290206	SFTWR DOWNLOAD UTIL V1.42	H	0	TOOL ONLY
9001018	LABEL IN-VITRO DIAG USE	A	1	
99125	LABEL 1"X1/2" CONTINOUS	C	1	MARK WITH MODEL NUMBER

ELX50/16 Strip Washer 16 Well

ELX50/16 Strip Washer 16 Well rev G As of 11-20-00				
Item	Description	Rev	Qty	Remarks
16077	WSHR FLT .174X.375X.030+/-.003	A	1	
4070003	KIT GENERIC HDW FINAL ASBY	J	1	
4070005-AS	-FINAL ASBY STRIP WSHR 8 WELL	N	0	DOCUMENT ONLY
4070018	ACCESSORIES 384 UNIT	B	1	
4070020-DS	FINAL TEST PROCEDURE ELX50/16	C	0	DOCUMENT ONLY
4070020-TP	FINAL TEST PROCEDURE ELX50/16	D	0	DOCUMENT ONLY
4070230	SFTWR DOWNLOADED CODE V1.06	C	0	TOOL ONLY
4070231	SFTWR DWNLD ASSAY CONFIG V1.04	A	0	TOOL ONLY
4070527	MANIFOLD 16 WELL ASBY	B	1	
4070602	TEST STATION UQUANT QC ASSAY	B	0	TOOL ONLY
4071001	OVRLY FRONT	B	1	
4071002	OVRLY KEYBOARD	A	1	
4072001	COVER TOP	D	1	
4072073	PLATE MANIFOLD GLIDE	C	1	
4072077	STRIP GLIDE	A	1	
4072079	SPACER GLIDE STRIP	B	1	
4072500	JIG MANIFOLD ALIGNMENT	D	0	TOOL ONLY
4072501	JIG ASSEMBLY STAND	A	0	TOOL ONLY
4072505	JIG MAINIFOLD CALIBRATION	C	0	TOOL ONLY
4072513	JIG OVERLAY ALIGNMENT	A	0	TOOL ONLY
4072518	TOOL STOPPER 3 HOLE WASTE BTL	A	0	TOOL ONLY
4072519	TOOL INLET DISTRIBUTION LINE	A	0	TOOL ONLY
4072521	JIG MICROPLATE STOP ALIGN	C	0	TOOL ONLY
4072522	JIG CARRIER POSITION CHECK	A	0	TOOL ONLY
4072523	JIG FOOT ALIGN	A	0	TOOL ONLY
4072526	JIG AUTOCAL VERIFY	B	0	TOOL ONLY
49900	PLUG .437DIA HOLE NYLON BLACK	B	4	
7101028	LABEL PATENT	A	1	
7332501	JIG OVRLY ALIGNMENT	A	0	TOOL ONLY
7770102	LABEL "FCC COMPLIANCE"	A	1	
7771011	LABEL ETL WITHOUT UL	B	1	
7771012	TAG S/N WITH CE MARK	A	1	
8290206	SFTWR DOWNLOAD UTIL V1.42	H	0	TOOL ONLY
9001018	LABEL IN-VITRO DIAG USE	A	1	
98011	BAG ZIP-LOCK SMALL	A	0	
98083	BAG,9X12 PLASTIC 2MIL	A	0	
99125	LABEL 1"X1/2" CONTINOUS	C	1	MARK WITH MODEL NUMBER

ELX50/16G Strip Washer 16 Well (Generic)

ELX50/16G Strip Washer 16 Well (Generic) rev G As of 11-20-00				
Item	Description	Rev	Qty	Remarks
16077	WSHR FLT .174X.375X.030+/-.003	A	1	
4070003	KIT GENERIC HDW FINAL ASBY	J	1	
4070005-AS	-FINAL ASBY STRIP WSHR 8 WELL	N	0	DOCUMENT ONLY
4070019	ACCESSORIES GENERIC 384 UNIT	B	1	
4070020-DS	FINAL TEST PROCEDURE ELX50/16	C	0	DOCUMENT ONLY
4070020-TP	FINAL TEST PROCEDURE ELX50/16	D	0	DOCUMENT ONLY
4070230	SFTWR DOWNLOADED CODE V1.06	C	0	TOOL ONLY
4070232	SFTWR GENERIC ASSAY V1.04	A	0	TOOL ONLY
4070527	MANIFOLD 16 WELL ASBY	B	1	
4070602	TEST STATION UQUANT QC ASSAY	B	0	TOOL ONLY
4071003	OVRLY KEYBOARD GENERIC	B	1	
4072040	COVER TOP GENERIC	D	1	
4072073	PLATE MANIFOLD GLIDE	C	1	
4072077	STRIP GLIDE	A	1	
4072079	SPACER GLIDE STRIP	B	1	
4072500	JIG MANIFOLD ALIGNMENT	D	0	TOOL ONLY
4072501	JIG ASSEMBLY STAND	A	0	TOOL ONLY
4072505	JIG MAINIFOLD CALIBRATION	C	0	TOOL ONLY
4072513	JIG OVERLAY ALIGNMENT	A	0	TOOL ONLY
4072518	TOOL STOPPER 3 HOLE WASTE BTL	A	0	TOOL ONLY
4072519	TOOL INLET DISTRIBUTION LINE	A	0	TOOL ONLY
4072521	JIG MICROPLATE STOP ALIGN	C	0	TOOL ONLY
4072522	JIG CARRIER POSITION CHECK	A	0	TOOOL ONLY
4072523	JIG FOOT ALIGN	A	0	TOOL ONLY
4072526	JIG AUTOCAL VERIFY	B	0	TOOL ONLY
49900	PLUG .437DIA HOLE NYLON BLACK	B	4	
7101028	LABEL PATENT	A	1	
7332501	JIG OVRLY ALIGNMENT	A	0	TOOL ONLY
7770102	LABEL "FCC COMPLIANCE"	A	1	
7771011	LABEL ETL WITHOUT UL	B	1	
7771012	TAG S/N WITH CE MARK	A	1	
8290206	SFTWR DOWNLOAD UTIL V1.42	H	0	TOOL ONLY
9001018	LABEL IN-VITRO DIAG USE	A	1	
98011	BAG ZIP-LOCK SMALL	A	0	
98083	BAG,9X12 PLASTIC 2MIL	A	0	
99125	LABEL 1"X1/2" CONTINOUS	C	1	MARK WITH MODEL NUMBER

ELX50/16V Strip Washer 16 Well w/Valves

ELX50/16V Strip Washer 16 Well w/Valves rev G As of 11-20-00				
Item	Description	Rev	Qty	Remarks
16077	WSHR FLT .174X.375X.030+/-.003	A	1	
4070003	KIT GENERIC HDW FINAL ASBY	J	1	
4070005-AS	-FINAL ASBY STRIP WSHR 8 WELL	N	0	DOCUMENT ONLY
4070018	ACCESSORIES 384 UNIT	B	1	
4070020-DS	FINAL TEST PROCEDURE ELX50/16	C	0	DOCUMENT ONLY
4070020-TP	FINAL TEST PROCEDURE ELX50/16	D	0	DOCUMENT ONLY
4070230	SFTWR DOWNLOADED CODE V1.06	C	0	TOOL ONLY
4070231	SFTWR DWNLD ASSAY CONFIG V1.04	A	0	TOOL ONLY
4070515	BOTTLE SUPPLY ASBY	B	1	
4070522	KIT,SUPPLY TUBE VLVE OPT ABY	C	1	
4070527	MANIFOLD 16 WELL ASBY	B	1	
4070602	TEST STATION UQUANT QC ASSAY	B	0	TOOL ONLY
4071001	OVRLY FRONT	B	1	
4071002	OVRLY KEYBOARD	A	1	
4072001	COVER TOP	D	1	
4072073	PLATE MANIFOLD GLIDE	C	1	
4072077	STRIP GLIDE	A	1	
4072079	SPACER GLIDE STRIP	B	1	
4072500	JIG MANIFOLD ALIGNMENT	D	0	TOOL ONLY
4072501	JIG ASSEMBLY STAND	A	0	TOOL ONLY
4072505	JIG MAINIFOLD CALIBRATION	C	0	TOOL ONLY
4072513	JIG OVERLAY ALIGNMENT	A	0	TOOL ONLY
4072518	TOOL STOPPER 3 HOLE WASTE BTL	A	0	TOOL ONLY
4072519	TOOL INLET DISTRIBUTION LINE	A	0	TOOL ONLY
4072521	JIG MICROPLATE STOP ALIGN	C	0	TOOL ONLY
4072522	JIG CARRIER POSITION CHECK	A	0	TOOL ONLY
4072523	JIG FOOT ALIGN	A	0	TOOL ONLY
4072526	JIG AUTOCAL VERIFY	B	0	TOOL ONLY
7101028	LABEL PATENT	A	1	
7332501	JIG OVRLY ALIGNMENT	A	0	TOOL ONLY
7770102	LABEL "FCC COMPLIANCE"	A	1	
7771011	LABEL ETL WITHOUT UL	B	1	
7771012	TAG S/N WITH CE MARK	A	1	
8290206	SFTWR DOWNLOAD UTIL V1.42	H	0	TOOL ONLY
9001018	LABEL IN-VITRO DIAG USE	A	1	
98011	BAG ZIP-LOCK SMALL	A	0	
98083	BAG,9X12 PLASTIC 2MIL	A	0	
99125	LABEL 1"X1/2" CONTINOUS	C	1	MARK WITH MODEL NUMBER

ELX50/16GV Strip Washer 16 Well (Generic) w/Valves

ELX50/16GV Strip Washer 16 Well (Generic) w/Valves rev G As of 11-20-00				
Item	Description	Rev	Qty	Remarks
16077	WSHR FLT .174X.375X.030+/-.003	A	1	
4070003	KIT GENERIC HDW FINAL ASBY	J	1	
4070005-AS	-FINAL ASBY STRIP WSHR 8 WELL	N	0	DOCUMENT ONLY
4070019	ACCESSORIES GENERIC 384 UNIT	B	1	
4070020-DS	FINAL TEST PROCEDURE ELX50/16	C	0	DOCUMENT ONLY
4070020-TP	FINAL TEST PROCEDURE ELX50/16	D	0	DOCUMENT ONLY
4070230	SFTWR DOWNLOADED CODE V1.06	C	0	TOOL ONLY
4070232	SFTWR GENERIC ASSAY V1.04	A	0	TOOL ONLY
4070515	BOTTLE SUPPLY ASBY	B	1	
4070522	KIT,SUPPLY TUBE VLVE OPT ABY	C	1	
4070527	MANIFOLD 16 WELL ASBY	B	1	
4070602	TEST STATION UQUANT QC ASSAY	B	0	TOOL ONLY
4071003	OVRLY KEYBOARD GENERIC	B	1	
4072040	COVER TOP GENERIC	D	1	
4072073	PLATE MANIFOLD GLIDE	C	1	
4072077	STRIP GLIDE	A	1	
4072079	SPACER GLIDE STRIP	B	1	
4072500	JIG MANIFOLD ALIGNMENT	D	0	TOOL ONLY
4072501	JIG ASSEMBLY STAND	A	0	TOOL ONLY
4072505	JIG MAINIFOLD CALIBRATION	C	0	TOOL ONLY
4072513	JIG OVERLAY ALIGNMENT	A	0	TOOL ONLY
4072518	TOOL STOPPER 3 HOLE WASTE BTL	A	0	TOOL ONLY
4072519	TOOL INLET DISTRIBUTION LINE	A	0	TOOL ONLY
4072521	JIG MICROPLATE STOP ALIGN	C	0	TOOL ONLY
4072522	JIG CARRIER POSITION CHECK	A	0	TOOL ONLY
4072523	JIG FOOT ALIGN	A	0	TOOL ONLY
4072526	JIG AUTOCAL VERIFY	B	0	TOOL ONLY
7101028	LABEL PATENT	A	1	
7332501	JIG OVRLY ALIGNMENT	A	0	TOOL ONLY
7770102	LABEL "FCC COMPLIANCE"	A	1	
7771011	LABEL ETL WITHOUT UL	B	1	
7771012	TAG S/N WITH CE MARK	A	1	
8290206	SFTWR DOWNLOAD UTIL V1.42	H	0	TOOL ONLY
9001018	LABEL IN-VITRO DIAG USE	A	1	
98011	BAG ZIP-LOCK SMALL	A	1	
99125	LABEL 1"X1/2" CONTINOUS	C	1	MARK WITH MODEL NUMBER

4070001 Accessories Set, Bottles and Tubes

4070001 Accessories Set, Bottles and Tubes rev G As of 11-20-00				
Item	Description	Rev	Qty	Remarks
12174	SCR KNURLED HD 4-40 X 5/8 SS	A	2	USED ON FINAL FOR HOLDING MANIFOLD
4070510	TUBING SET SUPPLY SYSTEM ASBY	D	1	
4070511	TUBING SET WASTE SYSTEM ASBY	A	1	
4070515	BOTTLE SUPPLY ASBY	B	2	
4070517	AEROSOL COVER ASBY	B	1	
4071000	MANUAL OPERATORS ELX50	E	1	IN 2ND BOX
4071006	DECLARATION OF CONFORMITY	B	1	IN MANUAL
4071007	PERFORMANCE VERIFICATION RPT	A	1	
4071015	INSTRUCTIONS CUSTOMER PACKING	B	1	
4072042	STYLUS, TUBE ASPIRATE	C	1	IN TUBE 1
4072043	STYLUS, TUBE DISPENSE	C	1	IN TUBE 1
4073001	SHIPPING CNTNR ASBY W/BOTTLES	C	0	
44299	LABEL "NO SHARP OBJECTS"	A	1	
48140	BOTTLE 2L H.D. HDPE NALGENE	C	1	
48146	FILTER,HYDROPHOPIC VACUUM LINE	B	1	
49744	SHELL 3/16 DIA X 4 5/8 OL	A	1	TUBE 1
49745	PLUG 3/16 DIA CLEAR	A	1	IN TUBE 1
61062	PWR SUPPLY 24VDC DESKTOP	F	1	
91083	BUBBLE BAG 8X11.5	A	0	
94075	SHIPPING DOCUMENT KIT	F	1	INSTALLED BY SHIPPING
98079	BAG POLY 12 X 18	B	0	
98083	BAG,9X12 PLASTIC 2MIL	A	0	FOR MANIFOLD AND CARRIER
98085	BAG POLY 26X32 2 MIL	A	0	FOR UNIT

4070002 Accessories Set, Generic Unit

4070002 Accessories Set, Generic Unit rev G As of 11-20-00				
Item	Description	Rev	Qty	Remarks
12174	SCR KNURLED HD 4-40 X 5/8 SS	A	2	USED ON FINAL FOR HOLDING MANIFOLD
4070510	TUBING SET SUPPLY SYSTEM ASBY	D	1	
4070511	TUBING SET WASTE SYSTEM ASBY	A	1	
4070515	BOTTLE SUPPLY ASBY	B	2	
4070520	AEROSOL COVER ASBY GENERIC	B	1	
4071000	MANUAL OPERATORS ELX50	E	1	IN SECOND BOX
4071006	DECLARATION OF CONFORMITY	B	1	IN MANUAL
4071007	PERFORMANCE VERIFICATION RPT	A	1	
4071015	INSTRUCTIONS CUSTOMER PACKING	B	1	
4072042	STYLUS, TUBE ASPIRATE	C	1	IN TUBE 1
4072043	STYLUS, TUBE DISPENSE	C	1	IN TUBE 1
4073001	SHIPPING CNTNR ASBY W/BOTTLES	C	0	
44299	LABEL "NO SHARP OBJECTS"	A	1	
48140	BOTTLE 2L H.D. HDPE NALGENE	C	1	
48146	FILTER,HYDROPHOPIC VACUUM LINE	B	1	
49744	SHELL 3/16 DIA X 4 5/8 OL	A	1	TUBE 1
49745	PLUG 3/16 DIA CLEAR	A	1	IN TUBE 1
61062	PWR SUPPLY 24VDC DESKTOP	F	1	
91083	BUBBLE BAG 8X11.5	A	0	
94075	SHIPPING DOCUMENT KIT	F	1	INSTALLED BY SHIPPING
98079	BAG POLY 12 X 18	B	0	
98083	BAG,9X12 PLASTIC 2MIL	A	0	FOR MANIFOLD AND CARRIER
98085	BAG POLY 26X32 2 MIL	A	0	FOR UNIT

4070018 Accessories Set, 384 Unit

4070018 Accessories Set, 384 Unit rev B As of 11-20-00				
Item	Description	Rev	Qty	Remarks
12174	SCR KNURLED HD 4-40 X 5/8 SS	A	3	USED ON FINAL FOR HOLDING MANIFOLD
2872304	PLUNGER DISP TUBE MANIFOLD XL	D	1	
4070510	TUBING SET SUPPLY SYSTEM ASBY	D	1	
4070511	TUBING SET WASTE SYSTEM ASBY	A	1	
4070515	BOTTLE SUPPLY ASBY	B	2	
4070517	AEROSOL COVER ASBY	B	1	
4071000	MANUAL OPERATORS ELX50	E	1	IN 2ND BOX
4071006	DECLARATION OF CONFORMITY	B	1	IN MANUAL
4071007	PERFORMANCE VERIFICATION RPT	A	1	
4071015	INSTRUCTIONS CUSTOMER PACKING	B	1	
4072042	STYLUS, TUBE ASPIRATE	C	1	IN TUBE 1
4073001	SHIPPING CNTNR ASBY W/BOTTLES	C	0	
44299	LABEL "NO SHARP OBJECTS"	A	1	
48140	BOTTLE 2L H.D. HDPE NALGENE	C	1	
48146	FILTER,HYDROPHOPIC VACUUM LINE	B	1	
49744	SHELL 3/16 DIA X 4 5/8 OL	A	1	TUBE 1
49745	PLUG 3/16 DIA CLEAR	A	1	IN TUBE 1
61062	PWR SUPPLY 24VDC DESKTOP	F	1	
91083	BUBBLE BAG 8X11.5	A	0	
94075	SHIPPING DOCUMENT KIT	F	1	INSTALLED BY SHIPPING
98079	BAG POLY 12 X 18	B	0	
98083	BAG,9X12 PLASTIC 2MIL	A	0	FOR MANIFOLD AND CARRIER
98085	BAG POLY 26X32 2 MIL	A	0	FOR UNIT

4070019 Accessories Set, 384 Generic Unit

4070019 Accessories Set, 384 Generic Unit rev B As of 11-20-00				
Item	Description	Rev	Qty	Remarks
12174	SCR KNURLED HD 4-40 X 5/8 SS	A	3	USED ON FINAL FOR HOLDING MANIFOLD
2872304	PLUNGER DISP TUBE MANIFOLD XL	D	1	
4070510	TUBING SET SUPPLY SYSTEM ASBY	D	1	
4070511	TUBING SET WASTE SYSTEM ASBY	A	1	
4070515	BOTTLE SUPPLY ASBY	B	2	
4070520	AEROSOL COVER ASBY GENERIC	B	1	
4071000	MANUAL OPERATORS ELX50	E	1	IN SECOND BOX
4071006	DECLARATION OF CONFORMITY	B	1	IN MANUAL
4071007	PERFORMANCE VERIFICATION RPT	A	1	
4071015	INSTRUCTIONS CUSTOMER PACKING	B	1	
4072042	STYLUS, TUBE ASPIRATE	C	1	IN TUBE 1
4073001	SHIPPING CNTNR ASBY W/BOTTLES	C	0	
44299	LABEL "NO SHARP OBJECTS"	A	1	
48140	BOTTLE 2L H.D. HDPE NALGENE	C	1	
48146	FILTER,HYDROPHOPIC VACUUM LINE	B	1	
49744	SHELL 3/16 DIA X 4 5/8 OL	A	1	TUBE 1
49745	PLUG 3/16 DIA CLEAR	A	1	IN TUBE 1
61062	PWR SUPPLY 24VDC DESKTOP	F	1	
91083	BUBBLE BAG 8X11.5	A	0	
94075	SHIPPING DOCUMENT KIT	F	1	INSTALLED BY SHIPPING
98079	BAG POLY 12 X 18	B	0	
98083	BAG,9X12 PLASTIC 2MIL	A	0	FOR MANIFOLD AND CARRIER
98085	BAG POLY 26X32 2 MIL	A	0	FOR UNIT

4070520 Aerosol Cover Assembly, Generic

4070520 Aerosol Cover Assembly Generic rev B As of 11-20-00				
Item	Description	Rev	Qty	Remarks
12107	SCR PAN 6-32X1/2 PHILLIPS SS	A	3	
16003	LKWSHR #6 HELICAL SPR SS	A	3	
17055	WSHR FL .156IDX.375ODX.049 SS	B	3	
19396	SCR 10-32X.375 THUMB NYLON	A	2	
4070517-AS	-AEROSOL COVER ASBY	B	0	DOCUMENT ONLY
4072020	COVER MIST	B	1	
4072039	COVER REAR MIST GENERIC	B	1	
4072059	RETAINER BAR AEROSOL COVER	A	1	
48255	TAPE LAB 1" WIDE YELLOW	A	0	A/R
67316	CHANNEL,RUBBER EXTRUSION	A	0.08	
98079	BAG POLY 12 X 18	B	0	BAG #1
98170	BAG ZIP-LOC 3X4	A	0	BAG #2

Section 8

Recommended Service Replacement Parts

The following are recommended service replacement parts for the ELx50 Strip Washer and its variations. These are the most common parts that might have to be replaced during preventive maintenance or repair. This list is subject to change.

Description	Bio-Tek Part Number
Display LCD 2 X 24 Super twist	04018
Belt Timing 260T 1/4W D	41049
Overlay/Keyboard	4071002
Main PCB Assembly	4070400
Tubing Supply Set Assembly	4070510
Tubing Waste Set Assembly	4070511
Bottle Supply Assembly	4070515
Syringe Pump Assembly	4070516
Operators Manual ELx50 Strip Washer	4071000
Cover, Top	4072001
Shipping Container Assembly	4073000
Waste Bottle	48140
Top Case Mounting Screws	49748
Power Supply	61062
Valve, Check 3/16” barbs, PP V 2.1#	68061
Compressor, Diaphragm 24VDC	68062
Idler Pulley Assembly	7120595
Cable, Opto Sensor 14L Assembly	7330506

Jigs for Assembly & Calibration	Bio-Tek Part Number
JIG MANIFOLD ALIGNMENT	4072500
JIG ASSEMBLY STAND	4072501
JIG LIFTING CAM ALIGNMENT	4072503
JIG MANIFOLD CALIBRATION	4072505

Section 9

Procedures

This section contains the Final Inspection and Test Procedures and Data Sheet for the ELx50 Strip Washer. These documents are subject to change.

PART NUMBER	DESCRIPTION
4070005-ST	Strip Washer Service Test
4070005-SD	Strip Washer Service Data Sheet
4070020-IP	Final Inspection Procedure ELx50/16
4070020-TP	Final Test Procedure ELx50/16
4070020-DS	Final Test Procedure ELx50/16 Data Sheet
8291007-AW	Field Software Download Procedure

C O N F I D E N T I A L

Bio-Tek Instruments, Inc.

Model: ELx50/8, ELx50/12 Strip Washers

Procedure: 4070005-ST

Title: Service Test Procedure

Rev	Description of changes	ECO	Date
A	Release to Production	29941	10/14/97
B	Changed Step # 10 to #13 and #13 to #10	30327	02/24/98
C	Add Shake Test & Custom Assay Check Off	30711	06/10/98
D	Added 16 Channel Manifold Testing / Calibrating	33883	10/03/00
E	Correction to step 23 accuracy limits	35485	10/17/01

Equipment Required:

*** Requires listing on the SF8 document.**

Equipment	Part Number
ELx50 Operator's Guide	4071000
ELx50 Service Manual	4071008
24 Volt Power Supply	61062
Power Cord Set USA	75011
2 ELx50 Supply Bottles BTI	4070515
1 ELx50 Waste Bottles BTI	48140
1 ELx50 Supply Tubing Sets BTI	4070510
1 ELx50 Waste Tubing Sets BTI	4070511
Strip Washer Final Inspection Procedure	4070005-IP
Costar Flat Bottomed 96 Well Plates BTI	98102
*Jig, Manifold Alignment	4072500
*Jig Microplate Stop Align (with pin removed)	7342500
*Jig Stand Asby	4072501
*Jig Autocal Verify	4072526
*Jig Manifold Calibration	4072505
*Jig 16 Channel Manifold Asby	4072524
*Jig Cam Alignment	4072522
*Jig Carrier Flatness	4072521
0.375" +/- .001" high spacer: (3/8" x 3/8" lathe bit)	
Stylus, Tube Aspirate	4072042
Stylus, Tube Dispense	4072043
Strip Washer Final Test Procedure	4070005-TP

*Precision scale with minimum 0.01 resolution and 120 gram capacity	
DI H_2O with 0.1% Tween 20 solution	
FD&C #1 Blue Dye (Warner Jenkinson Part # 05601-1105)	
50-200 ul pipette with tips	
Tool Inlet Distribution Line	4072519
Supply Tube Valve Option Asby	4070522
Null Modem Serial Cable	75053
*Test Station MQX200 QC Assays	4070600
Parallel Cable	71072
Parallel printer emulating Epson mode	
Field Software Download Procedure	8291007-AW
PC (386 min) with 1.44mb 3.5" floppy drive, 1 COM port minimum, mouse and 4 MB RAM	
Windows 3.1 or Windows '95 installed on above PC	
Download Utility	8290206-FW
Basecode and assay configuration firmware	(see BOM for specific model requirements)

Instructions:

1. Decontaminate washer as described in ELx50 Operator's Guide (4071000). (If the customer complaint has been recreated during this step, Please record this on the Data sheet.)

2. Record The following Information on the ELx50 Data Sheet: (4070005-SD)

   Return Authorization
   Serial Number
   Technician
   Date

3. Note the accessories received with unit and record on the receiving report document

4. Turn the instrument over and remove the Base Pan. Inspect all PCBs and ensure all cables and components are seated and oriented properly. For valve version units, verify all tubing is snug on each fitting.

5. Set a DVM to measure DC Volts. Attach the DVM to the positions noted below and measure the voltages. Record the values on the data sheet.

- Connect a DVM positive lead to C8+ and the negative lead to chassis ground. Set

- Connect the DVM positive lead to C5+ and the negative lead to chassis ground.

6. Record EPROM Information that is labeled on the EPROMs.

Cleaning and Updates:

7. Place the instrument on the Jig Stand (Refer to the 4070507-AS drawing in the ELx50 Service Manual.). Remove the top shroud.

8. Remove the Syringe Cap and inspect the inner Teflon compression ring for evidence of leaking. Replace cap if leaking is evident. Verify the plunger is clean and has a high gloss appearance.

9. Remove the manifold cover and inspect the rubber gasket for wear and puncture holes caused by the cleaning stylus.(**Note**: Do not lubricate the gasket)

10. Clean the following:

    - The Plate Carrier
    - Check Valves (If received by the customer)
    - All the rails.
    - manifold aspirate and dispense tubes.

11. Perform all mechanical Field Change Notices.

12. Inspect the up/down CAM rubber roller for wear. Replace if cracking.

13. Verify the up/down CAM is not rubbing against the optical sensor as it moves clockwise and counter clockwise.

14. Verify the Belt and pully hardware is tight.

Inspection:

15. Replace the top shroud. Remove the instrument from the jig stand and install the bottom base pan. Setup the instrument to perform a wash.

16. Power On the instrument. Allow the instrument to initialize. At main menu select UTIL, TESTS, and CHKSUM. Record the information on the data sheet.

17. Duplicate the customer reported problem if applicable. Note your findings on the data sheet.

18. If required by an Engineering Change Order or requested by the customer, update the instrument to latest version of the Basecode and Assay Configuration using the Field Software Download Procedure 8291007-AW. Record the information on the data sheet.
(Please inform the customer that the programmed wash routines will be erased when the new Assay Configuration files are loaded.)

19. **NOTE: For instruments with Basecode part # 4070230 downloaded, Please got to step # 21**

    Perform verification of the Vertical and Horizontal Alignment as described in Final Inspection Procedure, 4070005-IP. This is found in the ELx50 Service Manual Section 3.
    (If this step fails, perform the Auto calibration outlined in the Final Test Procedure, 4070005-TP. This test procedure can be found in the ELx50 service manual Section 3.0)

20. Run a shake test per the procedure outlined in the 4070005-TP.

21. **NOTE: If the instrument has Basecode Part # 4070202 downloaded, Please go to the Performance Testing section.**

    Perform verification of the Vertical and Horizontal Alignment as described in Final Inspection Procedure, 4070020-IP. This is found in the ELx50 Service Manual Section 3.
    (If this step fails, perform the Auto calibration outlined in the Final Test Procedure, 4070020-TP. This test procedure can be found in the ELx50 service manual Section 3.0)

22. Run a shake test per the procedure outlined in the 4070020-TP.

23. **Performance Testing**

For Basecode part # 4070202:

Perform the Residual, Accuracy tests as described in the Final Test Procedure 4070005-TP. Include copy of test results to the job sheet.

For Basecode part # 4070230:

Perform the Residual, Accuracy tests as described in the Final Test Procedure 4070020-TP. Include copy of test results to the job sheet.

Accuracy Test Limits:

8/12 Channel:

- Plate Weight with Fluid: 14.40 mg +/- 3% (13.97 - 14.83)
- Line #3 of Printout is less than 2.5%
- Line #4 of Printout is less than or equal to 2.99

16 Channel:

- Line # 3 is less than 3%
- Line #4 is less than 3%

Residual Test Limits:

8/12 Channel:

- Passes unless "Residual Test Failure" is displayed in the comments field.

16 Channel:

- Average residual less than 1.00mg and must say "PASS"
- Maximum residual less than 1.50mg and must say "PASS"

Final Quality Check:

24. Rinse washer with de-ionized water 2X or until all dye is gone.

25. Empty washer of fluid by running Prime with no fluid connected.

    (Do not run for longer than one minute without fluid.).

26. Clean the exterior of unit. Verify all hardware is tight and all tubing is properly seated.

27. Remove the manifold and place into the proper shipping container.

28. Ensure all received accessories accompany the unit. For Bio-Tek Instruments demo units, complete the demo checklist.

29. Attach the data sheet to Job Sheet.

Return Authorization # _____

Bio-Tek Instruments Inc.	
MODEL: ELX50/____	**TITLE:SERVICE TEST DATA SHEET**
PROCEDURE: 4070005-SD	**SERIAL #**
TECHNICIAN:	**DATE STARTED:**

Rev	Description of changes	ECO	Date
A	Release To Production	33883	10/03/00
B	Correction in step 23 Accuracy Limits	35485	10/17/01

For Page 1&2 use,
"Certificate of Calibration" Form: SF8
NOTE: Technician to complete form and mark "Uncertainty of Measurement" as _4_:_1_

Reference Procedure: 4070005-ST REV____ Other Required Documents: 4070005-TP REV____
4070020-TP REV____
4070005-IP REV____

Note: The Following Steps Correspond To The Order Of Steps On The 4070005-ST Document.

Step	Item	Results/Limits
	ASSEMBLY:	
1	Decontaminate Instrument	Completed_____(v)
3	Record accessories received.	Carrier:_____ Aspirate Tubing set:_____ Bottles:_____ Dispense Tubing set_____ Manifold_____ Aerosol Cover:_____ Stylus Kit:_____ Power supply:_____ Power Cord_____
4	Inspect the Instrument for loose hardware and proper tubing placement	Completed_____(v)
	TEST/DOWNLOAD	
5	Power Supply Checks: VCC Across C8+ and Ground +VA C5 (+) to Ground	 _____ 27.5 - 23.5 VDC _____ 5.525 - 4.475 VDC
6	**EPROM** information	Part #:_____ Version:_____ Rev:_____
	CLEANING AND UPDATES	
7	Remove the top shroud	Completed _____(v)

8	Syringe Cap Inspection	Completed _____ (v) Comments:
9	Manifold Gasket Inspection	Completed _____(v) Comments:
10	Cleaning of : Plate Carrier Check Valves Plate Carrier Rail Manifold Tubes	Completed _____(v) Comments:
11	Perform all Field Change Notices (FCNs) and Engineering Changes (ECOs)	Completed _____(v)
12	Inspect the Up/Down CAM rubber roller for wear	Completed _____(v) Comments:
13	Up/Down CAM inspection	Completed _____(v) Comments:
14	Belt and Pulley hardware inspection	Completed _____(v) Comments:
16	UTIL, TESTS and CHECKSUM	Basecode P/N:_____ VER:_____ CHECKSUM:_____ Assay Config P/N:_____ VER:_____
17	Duplicated Customer Complaint	Comments:
18	UTIL, TESTS and CHECKSUM (If new software was loaded.)	Basecode P/N:_____ VER:_____ CHECKSUM:_____ Assay Config P/N:_____ VER:_____ _____ (⌦) if no download was performed.
19 or 21	Verification of Vertical and Horizontal Alignment.	____PASS _____FAIL Comments:

20 or 22	Shake Test	____PASS _____FAIL Comments:
23	Performance Testing Accuracy Test (8/12 Channel) Accuracy Test (16 Channel) Residual Test (8/12 Channel) Residual Test (16 Channel)	____PASS _____FAIL _____ Plate Weight with Fluid (13.97 – 14.83) _____ Line # 3 of Printout. (< 2.50%) _____ Line #4 of Printout (<= 2.99) _____ Line #3 of Printout (< 3.0%) _____ Line #4 of Printout (< 3.0%) ____ PASS _____ FAIL (Comments field on printout) _____ Average residual (< 1.00mg and must say "PASS) _____ Maximum Residual (< 1.50mg : Says "PASS")

	Final Quality Check	
24	Rinse the Washer 2 times.	Complete _____(v)
25	Empty the fluid from the washer	Complete _____(v)
26	Clean Exterior	Complete _____(v)
27	Manifold placed in proper shipping container	Complete _____(v)
28	Accessories with Unit	Complete _____(v)
29	Attach Data sheet to Job Sheet	Complete _____(v)

I HEREBY CERTIFY THAT I HAVE REVIEWED ALL ACCEPTANCE DATA, THAT THE PRODUCT MEETS SPECIFICATIONS AND IS ACCEPTABLE FOR RELEASE.

_____ _____
Service Technician. Date

C O N F I D E N T I A L

Bio-Tek Instruments, Inc.

Model: Elx50 Strip Washer

Procedure: 4070020-IP

Title: Final Inspection Procedure ELx50/16

Rev	Description of changes	ECO	Date
A	Release To Production	32594	07/21/99

Equipment and Materials

Jig, Autocal Verify (4072526)
24 volt power supply (61062)
Feeler Gauges 0.001”-0.025”

Detailed Procedure

1.0 Alignment Setup

1.1 Verify that the carrier has the same serial number as the instrument. It is possible that an instrument will have one carrier for use with 8 and 16 channel manifolds and another for use with 12 channel manifolds.

1.2 Verify that the carrier rests on both adjustable feet and on the rail without rocking. Use the appropriate carrier for the manifold to be tested.

1.3 Install Autocal Verify Jig, #4072526, into the carrier. The jig must be positioned correctly in the carrier. One corner of the jig is labeled 12 CH with an arrow pointing to the corner. Another corner of the jig is labeled 8 or 16 CH with an arrow pointing to the corner. Choose the appropriate corner for the manifold being tested, and align that corner toward the front and against the right edge of the carrier.

1.4 Place the 8, 12, or 16 channel manifold on the manifold bracket. Fasten the manifold in place with thumb screws (4072066).

1.5 Configure the UUT for an 8, 12, or 16 channel manifold, whichever is appropriate. From the Main Menu use the soft keys and select UTIL, SETUP, MANIFLD, and press the soft key to select an 8, 12, or 16 channel manifold. Press the Main Menu key to return to the Main Menu.

2.0 Vertical and Horizontal Alignment Check

2.1 Use the soft keys and select UTIL, TESTS, and press the shift key and the #1 hidden key simultaneously (the #1 hidden key is located between the clear and enter keys).

2.2 Use the soft keys and press AUTOCAL, VERIFY, and then press the ENTER key. The carrier will slowly move into the UUT and the manifold will lower to a position just above the jig.

2.3 Verify that the manifold aspirate tubes do not touch the jig. Verify that the manifold aspirate tubes are less that .023 inches above the surface of the jig.

2.4 Verify that the difference between the aspirate tube which is closest to the jig surface and that which is furthest from the jig surface is less than .010 inches.

2.5 Press the ENTER key. The manifold will lift and the carrier will move further away from home and the manifold will lower into holes in the jig.

2.6 Verify that the manifold aspirate tubes have moved into the holes without catching the edge of the holes and lifting the manifold.

2.7 Press the ENTER key. The manifold and carrier will return to home.

2.8 Remove the jig from the carrier and press the Main Menu key.

2.9 Mark the data sheet to indicate that the UUT has met all of the above criteria.

2.10 Repeat of sections 8.0 and 8.1 for a second or third manifold as necessary.

2.11 Initial the routing to indicate that the UUT has met all of the above criteria.

C O N F I D E N T I A L

Bio-Tek Instruments, Inc.

Model: ELx50 Strip Washer

Procedure: 4070020-TP

Title: Final Test Procedure ELx50 Strip Washer

Rev	Description of changes	ECO	Date
A	Release To Production	32594	07/21/99
B	PG 9: Modify The Autocal Verification	32708	08/17/99
C	Chg section 3.0 to Make Generic; Highlight In Para 7.1,8.0,8.1; Order of Accuracy Changed; Add to Residual Test; Chg Para 1 In Clean Up Section; Update Index	33701	06/27/00
D	Add To Para 7.1 Step 5; Remove from Para 9.1 Step 20; Chg Para 9.4 Step 2	33806	08/16/00

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Equipment and Materials

(X) Requires listing on the "Lab Product Equipment Calibration Data" form specified on the data sheet.

A PC (386 min) with a 1.44 mb 3.5" floppy drive, 2 COM ports , mouse and 4 meg of ram min.
Windows 3.1 installed on the above PC
A PC (486 min) with a 1.44 mb 3.5" floppy drive, 2 COM ports , mouse and 16 megabytes of ram (recommended)
Windows 95, microsoft Excel version 7.0, and KCjr installed on above PC
75053 Serial Cable
71072 Parallel Cable
Any parallel printer with paper
Firmware (see BOM for what is required for the assembly being tested)
Costar flat bottomed 96 well plates BTI (98102)
Costar 384 well plates (98174)
2 ELx50 supply bottles BTI (4070515)
1 ELx50 waste bottles BTI (48140)
1 ELx50 supply tubing sets BTI (4070510)
1 ELx50 waste tubing sets BTI (4070511)

(X) Precision Scale with a min resolution of 0.01 and capacity of 120 grams.
Tween 20
FD&C #1 Blue dye
Deionized water
Gelman glass filter system for filtering dye
50ml beaker (2)
Plastic reservoir
200 ul pipettes w/tips
200-1000 ul pipettes w/tips
50-200 ul 8-channel pipette w/tips
Power Supply (61062)
Power Cord
Jig Manifold Calibration (4072505)
Jig Microplate Stop Align (4072521)
Jig Autocal Check (4072522)

(X) Test Station μQuant (4070602)
Jig Autocal Verify (4072526)
Jig 16 CH Manifold Asby (4072524)
Tool Stopper 3 Hole Waste Btl (4072518)
Tool Inlet Distribution Line (4072519) needed for washers with valves only
Supply Tube Valve Option Asby (4070522) needed for washers with valves only
ELx50/16 - (Set up to Dispense 150 ul, or 50 ul)
ELx50/16 - (Set up to Dispense 300 ul, or 100 ul)
Thumb screws (4072066)

1.0 Introduction

The ELx50 is a EB80C186 based computer which is assembled with no internal software installed other then two BOOT EPROMs. The ELx50 display the following message at initial power up.

"Power Up Sequence V*.**"
READY FOR DOWNLOAD... _____

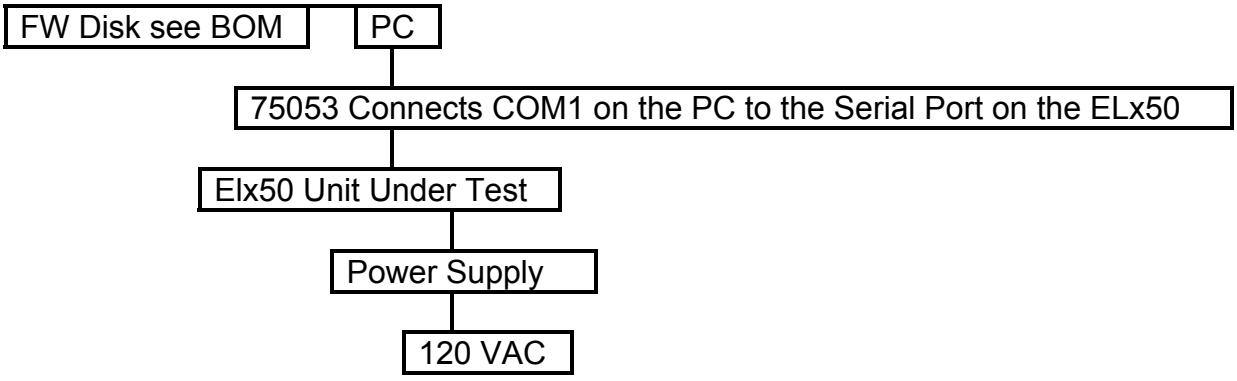
NOTE: The first line may vary depending on the version and model number, "*" Represents any number.

At this point the ELx50 will do nothing else until it has had **Operating Software** and **Assay Configuration Software** downloaded to it. Once operating software is downloaded the unit will need a configuration download, which loads in assay definition parameters. The need for two download operations comes about because we will in the future be manufacturing many different versions of this instrument. Each version will have different assay definition parameters. The Assay Configuration disk part number will be called out on each instrument versions final assembly BOM. The Assay Configuration Software installed on the load PC should be checked for the proper revision level each time the loading PC is used. See set up appendix for instructions.

2.0 Procedure

2.1 Connections

Connect the Unit Under Test (UUT) in the following manner with the power switches OFF.



2.2 Power Up

Once all of the test equipment is connected turn on the PC. Once the PC has completed its BOOT sequence switch on the ELx50. The ELx50 will display the following in sequence:

Power Up Sequence V*.**
Initializing.....
then
Power Up Sequence V*.**
Clearing Download Area
then
Power Up Sequence V*.**
READY FOR DOWNLOAD...

Note: The top line of the display may vary with model but the display must say, "Ready for Download" before proceeding. If the instrument has something else on the display turn it off and on again and press the shift and #1 hidden key (between the clear and enter keys) at the same time. This will erase the memory in the instrument.

Note: If at any time the Main PCB is replaced, tag the failed PCB with the appropriate version and rev of the firmware, which is loaded, as it is removed from the unit.

3.0 Entering Windows

(If Windows program is present on screen, go to para 4.)

Enter Windows 3.X, 95, or 98 operating system as needed.

Note: The PC in use as a download tool will need its windows environment configured one time. Once properly setup the system should work as described in the following procedure. See set up appendix at the end of this procedure.

4.0 Downloading Base Code

Insert the 4070201-FW **Operating Software** disk into the A: drive of the PC. Use the mouse and double click on the **ELx50 Utilities Icon** if the ELx50 utilities dialog box is not already open. Double Click on the **ELx50 Code Download** Icon (Swiss Army knife) in the dialog box.
On the reader display "Download In Progress" will appear.

The following will appear on the computer screen: ("*" Represents any number)

**Download Utility 7330201 Version *. **

Downloading elx50.bin to washer...
File size: (this number may vary with version & model number)
Bytes sent: (this will count up during download)
Checksum: (this will appear at completion of download)
Download Successful (this will appear at completion of download)

The UUT will reset at this point and may display an error (0BFF) because there is no assay configuration loaded yet. This may be variable depending on what has been done to the instrument.

Press the "Stop" key to stop the beeping and wait for the main menu to appear (30 sec), then press the shift and #2 hidden key(between Main menu and Previous Screen keys). This may bring up a screen which says **"Start Assay Download Y/N"**. In this case answer **"Yes"** and the **"Ready for Download"** screen will appear. In any case the unit needs to display the **"Ready for Download"** screen before proceeding.

5.0 Downloading Define Assay Configurations

NOTE: If unit was previously programmed you must clear the assays. See Appendix D: Clear Assays.

The following download loads actual assay definitions into the instrument under test.

Insert the Assay Config program disk 4070202, or 4070203 as per the BOM into the A:\ drive. The display on the UUT must say "Ready For Download" before proceeding. If it does not, Press the Main Menu key and then the shift and hidden key #2 simultaneously. Press Yes for download.

Use the mouse to double click on the **ELX50 Assay Config Download** Icon from within the ELX50 Utilities dialog box.

The user then will be prompted to select whether the target is an ELx800 Reader or an **ELx50 Strip Washer**. Insure that the ELx50 Strip Washer is selected. The computer will read in the files from the disk in the A:\ drive. This will take some time. A 50 series Download screen will appear on the computer screen.

Use the mouse to select **File** and then **Open**. Click on **"Bio-Tek ELx50"** in the Group list box then click on **"OK"**. This will bring in the assay definitions. If a foreign language configuration is required select it now by clicking on the arrow to the right of the language field, then select the appropriate language. Then click on the box to the left of the phrase “DOWNLOAD LANGUAGE”. Click on the **Download button** to initiate the download.

NOTE: The group list box may not list Bio-Tek ELx50 if the software version is different. There will be only one group listed and its name should be close to the software version name in ISIS. (For exceptions see following note).

The UUT display will change to DOWNLOAD **IN PROGRESS** while the assays are being downloaded.

When the download is done the computer will display a download successful message and the UUT will be reset to the normal main menu screen. This may take up to 15min to get to the main menu screen.

The UUT will usually ERROR IE00 because the AUTOCAL sequence has not been run. Press the "Stop" key to stop the beeper and return to the main menu.

Use the mouse to Click on **OK**, FILE and then EXIT to return to the windows menu.

Perform software configuration verification per Section 6.0 and record on data sheet.

To download the custom assay disk 407020** as per BOM. Follow instructions per Section 5.0, using 407020** as per BOM.

Perform software configuration verification per Section 6.0 and record on data sheet.

If the define assay download is unsuccessful or you want to download new define assay files, you must first **erase the existing** assay files. See Appendix D.

6.0 Software Configuration Verification

With the introduction of Assay definitions downloaded from a PC the need for determining if the assays loaded are the ones, which we really want in the version of the ELx50, we are setting up. If a foreign language was downloaded, the display should now reflect the appropriate language.

From the UUT main menu press the **Util** soft key. Then press the **Tests** soft key. Then press the **Chksum** key. A revision level and part number will appear on the display, as will the code checksum. Compare these against 407XXXX SP/MP version and checksum. On the second display, version and part number of assay/config download will be displayed. They should match 407XXXX-SP version number. Refer to BOM for proper –SP/MP.

7.0 Autocalibration

The Autocal procedure establishes an accurate manifold and carrier location for each washer. **All ELx50 Washers with 16 channel manifolds shall be calibrated in both 8 and 16 channel configurations.** All ELx50 Washers with only an 8 or 12 channel manifold shall be calibrated as 8 channel only.

7.1 Setting Up and Running Autocal

Note: Install Serial Number Label and mark Serial Number on Carrier.

1. Connect the ELx50 to the 24-volt power supply that will ship with the instrument, and power on the instrument.

2. Plug the connector for the **4072505** jig into the header which is underneath the left side of the washer. The correct header to use is the one closest to the front of the instrument.

3. Install **part 1**, the stepped plate portion of the jig, into the carrier. The tall steps are nearer the front of the instrument.

4. Install **part 2**, for (8, 12 ch) the contact pin portion of the jig onto the manifold bracket of the washer being tested and hold in place with 12174 screws.

5. Configure the UUT for an 8 or 12 channel manifold. From the Main Menu use the soft keys and select UTIL, SETUP, MANIFLD, and Press the soft key to select 8 or 12. Press the Main Menu key to return to the Main Menu.

Check off on the Data Sheet the Manifold(s) that are being tested.

6. From the Main Menu use the soft keys and select UTIL, TESTS, and then press the shift key and the #1 hidden key simultaneously (the #1 hidden key is located between the clear and enter keys).

7. Use the soft keys press AUTOCAL, MECH, and YES. The carrier will slowly move into the UUT and AUTOCAL will be performed.

8. If the UUT is a 16-channel ELx50, then configure the UUT for a 16-channel manifold (part 3). From the Main Menu use the soft keys and select UTIL, SETUP, MANIFLD, and Press the soft key to select a 16 channel manifold. Press the Main Menu key to return to the Main Menu.

9. **On ELX50/16**, remove **4072505 part 3** from the manifold bracket of the UUT and install 4072505 part 2. Hold in place with 12174 screws.

10. Repeat steps 6-7 above.

11. Remove the autocal jigs.

NOTE: TURN UNIT OFF AFTER AUTOCAL TO ENSURE UNIT HOMES AT NEXT POWER UP, BEFORE FLUIDICS TEST.

8.0 Autocal Verification

1. Verify that the carrier has the same serial number as the instrument.

2. Verify that the carrier rests on both adjustable feet and on the rail without rocking.

3. Install **Autocal Verify Jig, #4072526**, into the carrier. The jig must be positioned correctly in the carrier. One corner of the jig is labeled 12 CH with an arrow pointing to the corner. Another corner of the jig is labeled 8 or 16 CH with an arrow pointing to the corner. Choose the appropriate corner for the manifold being tested, and align that corner toward the front and against the right edge of the carrier.

4. Place the 8, 12, or 16-channel manifold on the manifold bracket.

5. Configure the UUT for an 8, 12, or 16 channel manifold, whichever is appropriate. From the Main Menu use the soft keys and select UTIL, SETUP, MANIFLD, and press the soft key to select an 8, 12, or 16 channel manifold. Press the Main Menu key to return to the Main Menu.

8.1 Vertical and Horizontal Alignment Check

1. Use the soft keys and select **UTIL**, **TESTS**, and press the **Shift Key** and the **#1** hidden key simultaneously (the #1 hidden key is located between the clear and enter keys).

2. Use the soft keys and press **AUTOCAL**, **VERIFY**, and then press the **ENTER** key. The carrier will slowly move into the UUT and the manifold will lower to a position just above the jig.

3. Verify that the manifold aspirate tubes do not touch the jig. **Verify** that the manifold aspirate tubes are less than .**023 inches** above the surface of the jig.

4. **Verify** that the difference between the aspirate tube, which is closest to the jig surface, and that which is furthest from the jig surface is less than **.010 Inches**. Furthest-Closest<.010”

5. Press the ENTER key. The manifold will lift and the carrier will move further away from home and the manifold will lower into holes in the jig.

6. **Verify that the manifold aspirate tubes** have moved into the holes without catching the edge of the holes and lifting the manifold.

7. Press the ENTER key. The manifold and carrier will return to home.

8. Remove the jig from the carrier and press the Main Menu key two times.

9. **Mark the data sheet** to indicate that the UUT has met all of the above criteria.

10. Repeat of sections 8.0 and 8.1 for a second or third manifold as necessary.

Refer to 4070005-IP, Mechanical Alignment Check, if UUT fails Autocal Verify.

9.0 Fluidics Test (See Page #20 For Solutions Mixtures)

Connect the Printer to the Parallel port of the Test Station. Apply Power to the Test Station and the Printer.

9.1 Accuracy Test

NOTE: When testing 8 channel and 16 channel manifolds the first 6 columns of the plate are used. When testing 12 channel manifolds the first 4 rows of the plate are used.

SETUP:

1. Set up the washer for the manifold to be tested. From the Main Menu screen use the soft keys and press UTIL, SETUP, MANFLD, and **select the 8, 12, or 16-channel manifold**.

2. Install the appropriate manifold on the UUT.

3. Place the stopper of a 4070511, Tubing Set Waste System Assembly, firmly into the top of an empty waste bottle.

4. Connect the two manifold outlet ports of the UUT to the waste line of this stopper.

5. Connect the vacuum supply line from the stopper to the vacuum port on the rear of the UUT.

6. Connect a buffer bottle containing 300 ul Solution to the washer inlet of the UUT using the long tube of a 4070510, Tubing Set Supply System Asby. The washer inlet is the lower syringe port at the back of the instrument. Make sure that there is a check valve in place, and that the flow arrow is pointing in direction of the inlet port. *(For instruments with valves, connect the supply line from the lower syringe port to the outlet port on the back of the washer, after shortening the line to 5 inches long. Use a 4072519, Tool Inlet Distribution Line, to connect valve 'A' to the buffer bottle of 300 ul Solution.)*

7. Connect the manifold supply line to the manifold inlet and the syringe outlet port. The manifold inlet port is the single port closest to the edge of the manifold. The syringe outlet is the top syringe port at the back of the instrument. Make sure that the check valve is in place, and that the flow arrow is pointing toward the manifold.

8. When testing 16 channel manifolds, it will be necessary to run the reader test station from a remote computer. This PC will have Windows 9X operating system, Excel, and KC jr software loaded. Connect the serial port of the computer to the serial port of the uQuant. Power on the computer and open the KCjr program. Open the EXCEL spreadsheet program and the files ACCURACY.XLT and RESIDUAL.XLT.

9. From the Main Menu select: RUN, PRIME, and press the OPTION key, if necessary, until NEW_BUFFER_PRIME is displayed. Then press the ENTER key to select this program. If priming empty supply lines, then repeat the

priming steps twice. *(For washers with valves press the ENTER key again to select valve 'A'.)* Press the ENTER key or the START key to run NEW_BUFFER_PRIME. *(For washers with valves, repeat for valves B and C.)* This will prime the washer with the 300 ul Solution. When the program is complete, press the MAIN MENU key.

TESTING:

10. Place a Costar flat-bottomed plate on the balance and tare the balance. Use **a 96 well plate for testing 8 and 12 channel manifolds** and a **384 well plate for testing 16 channel manifolds.**

11. Load the plate onto the carrier of the UUT making sure that the orientation of the plate in the carrier matches that of the manifold in the washer.

12. From the Main Menu select RUN, DISP, and press the OPTION key until **accuracy_qc_test** is displayed for 8 or 12 channel manifolds or the **acc_qc_test384** is displayed for 16 channel manifolds. Then press the ENTER key to select this program*. (If this is a ELX50 model with valves, then use the soft keys to select valve A.)*

13. Use the number keys to **Enter** the number of **Strips** to process (6 or 4). Press the **ENTER** key again to save the selection.

14. Press the ENTER key a final time to start the program. The washer will dispense 300 ul or 100 ul to the wells depending on which manifold is in place. When the program is complete, press the MAIN MENU key.

15. Immediately remove the plate from the carrier and **Weigh** it. Record the Weight.

16. Place the plate in the carrier of the **μQuant reader test station** with the strips containing the fluid to left side of the carrier or to the back of the carrier depending on which manifold is being tested.

NOTE: Follow steps 17-20 for 8 and 12 channel washers. Go to step 21 for 16 channel washers.

17. Use the soft keys to select READ, and then press the OPTION key until the 1x8 ACCURACY or the 1x12 ACCURACY test is displayed. Press the ENTER key to select this program.

18. Enter the **Serial Number** of the instrument being tested for the PLATE ID and press the ENTER key.

19. Enter the **Weight** including the decimal point and press the ENTER key.

Press the ENTER key to start the read.

20. Remove the printouts from the printer and observe the results. For 8 and 12 channel manifolds, under QC_Results, Accuracy_pct_err, the **third item on the list, must be less than ±2.5%. CV_Percent, the fourth item on the list must be less than +2.99.**

NOTE: Follow steps 12-22 are for 16 channel washers.

Use PC with Microsoft Windows 9X operating system and Microsoft Excel.

21. **Setup**: Click on **the "Excel" icon** to open and "**File**." Open **the "test 384 16 channel accuracy.xlt.**
Click on password "READ ONLY" **Minimize** excel by clicking on the "**-**" on the upper right corner.

Open KcJr by clicking on the KcJr icon and Select **"OK".** Open the **"protocol"** and select **"384_630450"** if not selected at the open protocol dialog.

Click on **" Open". Now you are ready to read the plate.**

NOTE: Use the mouse to switch back to the KC jr program. In the KC jr program select the **384_630450 protocol** (if not already selected).

22. **NOTE: When you read the plate ensure the μQuant (Test Station 4070602) is at the main menu**. Click "**Read Plate**" and "**Read Plate at dialog**". Now click on "**OK**". The μQuant will read the plate and the absorbence data will be displayed. This will take about 8 minutes to complete. When the plate has finished and the data is showing, click on the **"Transformation" Tab** (these results are the solutions with the scratches from the plate removed).
23. **Highlight A1-P6** (hold & drag mouse) of the data displayed in KC jr. Press the **CTL Key** and simultaneously press the **C key**. This is a copy command.

24. **Minimize KCjr** by clicking on the" **– " on the upper righter hand corner** of the window.

25. Open excel by clicking on the excel tap on the taskbar(this should have been minimized in step #12) ensuring the **"test 384 16 channel accuracy.xlt"** is open.

26. The **cursor must be at Excel cell C3** (A1 well of the UUT). Press the **CTRL**

Key and simultaneously press the **V key**. This is a paste command. The data from the reader file will be copied into the spreadsheet program.

27. Below the data (Excel cell E23) enter **Weight** and cell I23 **Valve or Non-Valve** information needed.

28. Plug the printer into the parallel port of the computer with EXCEL installed. Print the results **by clicking on the print icon.**

29. Observe the results that were printed. **For 16 channel manifolds Accuracy and %CV error <3%. Both must state "Pass".**

30. For washers with multiple manifolds, **Accuracy and Residual tests must be performed on each manifold**. Repeat sections 9.1 and 9.2 for each manifold. Remember to configure the washer for the manifold being tested.

31. ***For washers with valve option,*** *(A,B,C)* ***Ensure proper operation of each Valve with a Prime****. Observe during the* ***Prime****,* ***the fluid is moving*** *through the tubes marked accordingly: A to A valve , B to B, C to C.* ***It is possible for the wiring to be incorrect, causing it to select the wrong valve.***

32. **Initial The Printouts** and make a second copy of each to be shipped with the instrument. Attach original print out(s) to the data sheet.

9.2 Residual Test

1. Place a Costar flat-bottomed plate on the balance and tare the balance. Use **a 96 well plate for testing 8 and 12 channel manifolds** and a **384 well plate for testing 16 channel manifolds.**

2. When testing 8 or 12 channel manifolds, use an 8-channel **hand pipette** and add 150 ul of Evacuate Solution to one half of the microwell plate. When testing 16 channel manifolds, use an 8-channel pipette and add 50 ul of Evacuate Solution to 6 columns of the microwell plate. Avoid getting dye on the rim of the wells. This will cause unexplainable failures of the test. **The ELx50 Test Station with a 16-channel manifold may be used rather than the hand pipette method.**

ELX50 150 ul TEST STATION SETUP

1. Select test manifold 8,12, or 16 channel
2. Depress the **soft key**, **utility**, **setup**, **manifold** then select 8 ,12, or 16 and return to the **main menu**.

3. Depress soft keys **run** then **option** key.
4. Select **D150** programs for 8 or 12 channel manifolds or select **Resid-QC-test 384** (for 16 channel).
5. Hit **enter**, **main menu**, **run, prime, option** key to select New – Buffer-Prime then **enter** twice.
6. Weigh the tray, then place it in the carrier. Run **disp** then **enter** twice

NOTE: When testing 8 channel and 16 channel manifolds, the First 6 columns of the plate are used. When testing 12 Channel manifolds, the first 4 rows of the plate are used.

3. Place the plate in the carrier of the UUT with the 150 ul Evacuate Solution wells toward the back of the carrier. Make sure that the orientation of the plate is in the carrier.

4. From the Main Menu select **RUN**, **MORE**, **ASPIR**, then press the **OPTION** key until **residual_qc_test** is displayed for 8 and 12 channel manifolds or the **resid_qc_test384** is displayed for 16 channel manifolds and press the ENTER key to select this program.

5. Use the number keys to **Enter The Number Of Strips** to process **(6 or 4).** Press the ENTER key again to save the selection.

6. Press the ENTER key or the START key a final time to start the program. The washer will aspirate the contents of the strips containing the Evacuate Solution. When the program is complete, **return to the main menu** and **prime** the unit to clean.

7. **Immediately remove the plate from the carrier and weigh it** because the residual is small and it will begin to evaporate. Record the weight.

8. When testing 8 and 12 channel manifolds, use an 8-channel hand pipette add 300 ul of DI Tween 20 to the wells containing the residual dye solution (this will require dispensing more than once to each well). When testing 16 channel manifolds, use an 8-channel hand pipette and add 100 ul of DI Tween 20 to the wells containing the residual dye solution. The ELx50 Test Station with a 16-channel manifold may be used rather than the hand pipette method.

ELX50 300 ul TEST STATION SETUP

1. Select test manifold 8, 12, or 16 channel.

2. Depress **soft key, Util**, **Setup**, **Manifold** select 8,12, or 16 and return to the main menu.
3. Depress the **soft key Disp**, then **options**, select **Disp 300** for 8 or 12 ch. or **Accur-QC-test384** 16 channel.
4. Select 6 strips for 8 or 16 ch. units. Select 4 strips for 12 ch. units.
5. Depress **soft key Enter, Main Menu, Run, Prime, Option** key to select New Buffer-Prime then **enter twice**.
6. Weigh tray, place in carrier, press **Run, Disp, Enter** twice.

9. Place the plate in the carrier of the **μQuant reader test station** with the strips containing the fluid to left side of the carrier or to the back of the carrier depending on which manifold is being tested.

Residual Test Limits:

For 8 and 12 channel manifold testing, passes unless "Residual Test Failure" is displayed in the comments section.

For 16 channel manifolds, Average residual <1.0 mg must say PASS and Maximum residual <1.5 mg must say "PASS".

NOTE: Follow steps 10-14 for 8 and 12 channel washers. Go to step 15 for 16 channel washers.

10. If testing an 8 or 12-channel manifold, then use the soft keys to select READ, and then press the OPTION key until 1x8 RESIDUAL or 1x12 RESIDUAL test is displayed. Press the ENTER key to select the appropriate program.

11. Enter the **Serial Number** of the instrument being tested for the PLATE ID and press the ENTER key.

12. Enter the **Weight** including the decimal point and press the ENTER key. Note, if the weight was .01 or less, enter .01.

13. Press the ENTER key to **start the read**. The reader will read the plate, calculate the results, and print the results.

14. To **print a second copy of the report**, on the reader key pad, press the REPORT soft key, the RESULT soft key, and the OPTION key until the file

to print is displayed, then press the ENTER key.

NOTE: Follow steps 15-25 for 16 channel washers.

15. Open Excel selecting: **File**, **test 384 16 channel residual.xlt**. Minimize Excel and **Open KCjr**. In KCjr program select **Protocol**, **Open protocol**, **384-630450.** Refer to Appendix E to create this protocol if it isn't present.

16. Click on **Read Plate**, **read plate at dialog**, and **Ok**. The μQuant will read the plate and the absorbence data will be displayed.

17. Use the mouse and select the **Transformations Tab**, then use the arrow keys of the computer to move to well A1 of the data displayed in KC jr.

18. Press the **Shift Key** and simultaneously use the arrow key to move the cursor from **A1, down and over to highlight A1- P6.** The wells from **A1-P6** Should now appear highlighted.

19. Press the **CTL Key** and simultaneously press the **C key**. This is a copy command.

20. Use the computer mouse and change to the EXCEL spreadsheet application. Click on **File** selecting program test **384 16 channel residual.xlt** to change to the correct spreadsheet program.

21. With the **cursor in cell C3** press the **CTR** key and simultaneously press the **V Key.** This is a paste command. The data from the reader file will be copied into the spreadsheet program. See 9.1 paragraph 8.

22. Move the cursor to **cell E23** and **Enter The Weight** including the decimal point. Press the ENTER key when finished.

23. Move the cursor to **cell E25** and **Enter The Serial Number** of the UUT. Press the ENTER key when finished.

24. Move the cursor to **cell E27** and **Enter Your Name Or Initials**. Press the ENTER key when finished.

25. Plug the printer into the parallel port of the computer with EXCEL installed. Click on the **print icon** or go to **file** and **select print**.

9.3 Burnin Testing

Burnin testing may be run now or after completing the residual and precision and accuracy testing. Each ELx50 shall be run for a **minimum of 1 hour of burnin.** There is a burnin program loaded with the base code of each ELx50. This

program mimics a plate washing program and loops continuously until stopped. The object of running the burnin program is to reveal any early life component failures, which may occur. The operator must observe the instrument under test just prior to terminating the test and determine that it is aspirating and dispensing to the microplate wells and that there are no visible leaks.

NOTE: It is important to maintain clean solutions and bottles and tubing for all testing of ELx50 washers. Water and dye solutions, which are recycled over several days, will grow algae, bacteria, molds, or other undesirable organisms. Refer to Appendix A for maintenance recommendations for supplies.

1. Add approximately 250 ml of DI H_2O with 0.1% Tween to a clean empty waste bottle.

2. Place the stopper of a Tool Stopper 3 Hole Waste Btl (4072518) firmly into the top of the waste bottle.

3. Connect the 2 waste line fittings of the stopper to the manifold of the UUT and the vacuum line to the vacuum port of the UUT.

NOTE: Do not over tighten the tapered luer fitting connections. Finger tighten only. If finger tight were rated 1-10 with 10 being hard, this shall be a 1.

4. Connect the short tube of a 4070510 Tubing Set to the inlet port on the washer manifold. Connect the other end of this tube to the top port of the syringe of the UUT.

5. Connect the long tube of a fluid inlet line (4070510 Tubing Set Supply System Asby) to the fitting on the stopper and to the bottom port of the syringe of the UUT. **For ELx50s with valves**, connect the fluid inlet line from the output port on the back of the instrument to the syringe, and use the Tool Inlet **Distribution Line, 4072519**, to connect the supply port of the bottle to the three inlet ports of the washer.

6. If the washer is an ELx50/16, then install a 16 channel manifold on the washer and configure the washer for a 16 channel manifold.

7. Start the burnin program. From the **Main Menu**, use the soft keys and press **UTIL**, **TESTS**, then press the **shift and #1 hidden key** simultaneously. Use the soft keys and press **MFG** and **BURNIN**.

NOTE: If the wash manifold is catching on the edge of the Microplate wells, then the Autocal configuration is not correct, and Autocal must be rerun.

8. When burnin cycling has completed, press the STOP key to end cycling, and disconnect the UUT from the fluid and vacuum lines.

9.4 Verify Shaking

1. The burnin program includes shaking as part of its program. During the shaking cycle, observe that the carrier is moving back and forth and that the liquid is mixing in the wells.

2. Check Pass or Fail to indicate that shaking has been verified.

NOTE: Repeat any failed test.

9.5 Cleanup

1. Disconnect the DI H2O with 0.1 Tween solution from the UUT and connect a supply bottle of plain Deionized Water. Run the maintenance program DAY_RINSE. From the Main Menu select MAINT, and press the OPTION key until DAY_RINSE is displayed, then press the ENTER key to select this program. **Repeat process.**

2. *(For UUT with valves, disconnect the fluid single supply line from the burn in bottle and connect and connect the fluid inlet lines 4072519. Run the maintenance program DAY_RINSE again. Repeat this step for valve 'A, B, C'.)*

3. Disconnect all tubes from UUT and remove the carrier. Take care not to mix the carriers from different washers since each carrier is aligned for a specific washer.

4. Pick the UUT off of the bench and tilt it back to drain any remaining fluid from the syringe pump.

5. If only one manifold is being tested and this is not an instrument with valves, repeat step one.

NOTE: Do not let the weight of the washer rest on the rear panel because this may damage the syringe cup, which sticks out of the back of the instrument.

7. Use a paper towel or acid brush with Isopropyl Alcohol to remove any blue dye stain from the fluid ports of the manifold and the washer.

10.0 Label Application

After successful completion of all tests, apply regulatory labels per BOM and final assembly drawing. This is to be done by a certified technician. Not required for Service.

Appendix A: Bottle and Supplies Maintenance

Prepare batches of dye and Deionized water solution that are small enough to be consumed within two weeks. Rinse the bottles before adding fresh dye.

Sanitize all supply bottles and tubing sets, waste bottles and hoses once a month with 70% isopropyl alcohol. Dump residual dye and water down the drain. And rinse everything with water from the sink first. Thoroughly wash all supplies in hot soapy water. Rinse again with sink water. Then rinse all with the alcohol.

SETTING UP FLUIDICTS TEST

Prepare a solution of DI H_2O with 0.1% Tween 20, by mixing 1 liter of Deionized water with 0.9 ml of Tween 20.

Prepare the washer Evacuate Solution by mixing 1 liter of DI H_2O Tween solution with 0.50 grams of FD&C #1 blue dye. This solution will be referred to as the Evacuate Solution. Mix the solution well.

Prepare the washer precision and accuracy solution by mixing 1770 ml of DI H_2O Tween with 30.0 ml of washer evacuate solution. This is a 1:60 dilution. This solution will be referred to as the 300 ul Solution.
Setup the 4070602, Test Station uQuant QC Assays. Connect the printer to the parallel port of the test station. Power on the test station and the printer.

Appendix B: Download Computer Setup

Adjustments to the default Windows and Extensions installation that needs to be done before the above procedure will function as described. These adjustments will only need to be made once, and will remain on the set up computers hard disk. The mouse and keyboard will be used to manipulate files. Click and Double Click refer to using the mouse to select something (by moving the cursor to the item) and depressing and releasing the left most mouse button.

First: Install 8290206-FW (SFTWR DWNLD Utility Vx.xx) (Reference BOM)

Follow the Procedure in 8291007-AW.

Second: Modify Configuration and Add Functionality

Change the **Extensions Description** to **"ELX50 Utilities".**
Change the **Description** of the Define Protocol Download Icon to read **"ELx50 Assay definition download"**.

Create a shortcut in Windows with these Properities for Downloading Basecode.

Description: **ELx50 Code Download**
Command line: **A:\Dload**
Working Directory: **A:**

Appendix C: Error Codes

An error code is displayed on the Microplate washer as a four-digit identifier. The first character will be either 0, 1, or A. 0 or a 1 indicates a non-critical error, and the instrument will respond to keypad input. An A as the first character denotes a more serious error. In this latter case, turn off the washer. Upon restarting the washer, you should be able to enter commands into the keypad.

General Errors

These errors indicate non-fatal conditions that require attention. If an error is displayed, refer to the troubleshooting tips and checklists shown in Chapter 5. Contact Bio-Tek's Technical Assistance Center for further instructions.

Error	Error Code	Cause
ABORT_ERR	0100	Wash function aborted.
NO_SENSOR_ERR	0200	Manifold motor couldn't find optical-sensor.
NO_SENSOR_ERR	0201	Carrier motor couldn't find optical-sensor.
NO_SENSOR_ERR	0202	Syringe motor couldn't find optical-sensor.
AUTOCAL_JIG_ERROR	0300	Manifold motor couldn't find edge of jig.
MOTOR_VERIFY_ERR	0400	Manifold motor failed positional verify.
MOTOR_VERIFY_ERR	0401	Carrier motor failed positional verify.

MOTOR_VERIFY_ERR	0402	Syringe motor failed positional verify.
UNDEF_PROG_TYPE_ERR	0500	Undefined program type specified.
PROGRAM_NUM_ERR	0600	Invalid (assay number).
PROGRAM_SET_ERR	0700	Invalid write attempt.
PROGRAM_DEL_ERR	0800	Invalid delete attempt.
E**rror** (continued)	**Error Code**	**Cause**
SYR_VOLUME_TO_LARGE	0900	Syringe volume too large.
PROGRAM_CHECKSUM_ERR	0A00	Checksum failure (assay number).
MANIFOLD_AUTOCAL_ERR	0B00	Invalid manifold for calibration.
INVALID_BUFFER_ERR	0C00	Invalid buffer selected.
CAL_CHECKSUM_ERR	0D00	Failed calibration checksum test.
DISPENSE_RATE_ERR	0E00	Dispense rate is invalid for manifold type.
DISPENSE_VOLUME_ERR	0F00	Dispense volume invalid for manifold type.
CNFG_DATA_ERR	1000	Necessary configuration data missing.
CNFG_CHECKSUM_ERR	1100	Failed configuration checksum test.
CAL_DATA_ERR	1200	Necessary calibration data missing.
MOTOR_NOT_HOMED_ERR	1300	Manifold motor not homed successfully.
MOTOR_NOT_HOMED_ERR	1301	Carrier motor not homed successfully.
MOTOR_NOT_HOMED_ERR	1302	Syringe motor not homed successfully.
AUTOCAL _ABORT_ERR	1400	Autocal of washer was aborted.
MALLOC_ERR	1900	Memory allocation failure.
ASPIRATE_POS_ERR	1A00	Carrier offset position is out of range for present manifold.
DISPENSE_POS_ERR	1B00	Carrier offset position is out of range for present manifold.
SYRINGE_FMEA_ERR	1C01	Sensor not found at start of syringe aspirate stroke.
SYRINGE_FMEA_ERR	1C02	Sensor not open at start of dispense stroke.
SYRINGE_FMEA_ERR	1C03	Syringe aspirate stroke failure.
SYRINGE_FMEA_ERR	1C04	Sensor verify after last syringe stroke in program failed.
SYRINGE_FMEA_ERR	1C05	Syringe FMEA failure.
MANIFOLD_POS_ERR	1D00	Could not calculate manifold position for offset provided.
AUTOCAL_CHECKSUM_ERR	1E00	Autocal checksum error.

Fatal Errors

These errors indicate fatal conditions that require immediate attention. If a fatal error is displayed, contact Bio-Tek's Technical Assistance Center for further instructions.

Error	Error Code	Cause
TCB_NOT_AVAIL_ERR	A100	Task control block not available.
READ_NOT_AVAIL_ERR	A200	Reader function already in use.
NOT_AVAIL_ERR	A300	Device not available.
CHECKSUM_ERR	A400	Failed code checksum test on power up.
POWER_ERR	A500	Power dropped below safe level.
QFLASH_TIMEOUT_ERR	A600	Quick flash configuration timed out.
QFLASH_ERR	A700	Quick flash read didn't match write.

Appendix D: Clear Assays

1. Place any assay disk in drive A:\, double click on 800 Assay Definition Icon.

2. Click on ELx50 strip washer. Click on **OK**.

3. Plug serial cable into ELx50. Turn on ELx50, push **SHIFT** key and **hidden key** between Main Menu and Previous Screen to make unit ready for download. Press **YES** on ELx50.

4. Click on **SETUP**; click on **Clear Wash Programs**. Click on the box to the left of "**remain in download mode**" (to make X in box go away). Click on "**Clear Wash Programs**".

5. Now all assay software should be cleared.

Appendix E: Using KCjr Data Reduction Software

Creating a data reduction protocol.

1. Use the mouse to double click the KCjr icon on the desk top or select START, PROGRAMS, Kcjunior, and click the Kcjunior pop up box.

2. Select OK and wait for the program to initialize.

3. Select NEW PROTOCOL and enter a protocol name in the appropriate box. Use the name 384_630450. This protocol will read a 384 well plate at 630 nm and 450 nm reference wavelengths.

4. Use the mouse to select the READ METHOD tab.

5. In the box labeled Read Method Type, select MultiWavelength.

6. In the boxes labeled Wavelengths (nm) select first 630 and then 450.

7. In the box labeled Plate Geometry select 16x24

8. Use the mouse to select the TEMPLATE tab.

9. Use the mouse to select Well Ids.

10. At the box labeled Well Type Selections, choose sample.

11. Using the mouse, click and hold the left mouse button on Well A1and drag the mouse down to well P1 and then across to well P24. This will assign Well Ids to all 384 wells. Well A1 should read SMP01 and well P24 should read SMP384.

12. Use the mouse to select TRANSFORMATIONS.

13. At the box labeled Transformation Formula use the mouse to click the down arrow and highlight the transformation formula WV(630)-WV(450).

14. Using the mouse, click and hold the left mouse button on Well A1and drag the mouse down to well P1 and then across to well P24. This will highlight all 384 wells.

15. Using the mouse click the button labeled APPLY. The formula will be applied to all wells.

16. Use the mouse to select the REPORTS tab.

17. In the box labeled Report Banner type “384 Well Absorbance Data 630-450”.

18. Use the mouse to check the box labeled Formula Reports.

19. Use the mouse to click the button labeled OK.

20. At the main Screen select New Protocol. You will be prompted to save the protocol 384_630450, select yes.

Certificate # (WO/UNIT):_____

Bio-Tek Instruments Inc.	
MODEL: Elx50/_____	**TITLE: Final Test Data Sheet Elx50**
PROCEDURE: 4070020-DS	**SERIAL #**

Rev	Description of changes	ECO	Date
A	Release To Production	32594	07/21/99
B	Add Ref To Metal Strip, Verify Stylus Per BOM, Modify Autocal Verification Section, Delete Note, Add Fluids Test Heading	32708	08/17/99
C	Rewrite To New Format	33806	08/16/00

For Page 1 & 2 use,
"Lab Product Equipment Calibration Data (C of C) Form" QA70. 02FORM7
NOTE: Technician to complete form and mark "Uncertainty of Measurement" as _4_:_1__

Reference Procedure: 4070020-TP REV___

Note: The Following Steps Correspond To The Order Of Steps On The Cal Procedure. Attach All Printouts To The Back Of The Data Sheet. Numbers In Paragraphs 8.0-9.2 Parenthesis Are The Steps In The Procedure.

ASSEMBLY/ALIGNMENT

Refer to 4070005-AS. Check off items below as completed

Item	Results
Shoulder screws on carrier rail and manifold bracket rail are tight.	___Pass___Fail
Four set screws in shaft collar of manifold bracket rail are tight with loctite applied.	___Completed
4072503 jig for cam assembly is tight against post and slides freely with little or no gap on jig surface.	___Pass___Fail
Tighten nylon screw and nut on carrier and verify there isn't an rocking.	___Pass___Fail
Verify EPROM revision and version per 4070400-BOM. Ensure they are installed correctly. (high and low in the correct sockets).	___Rev_____Ver ___Pass___Fail
Verify/Adjust display for correct contrast.	___Completed
Ensure part number label installed. (P/N 99125)	___Completed
Tubing clip, shell plug, tube aspirate stylus,and tube dispense stylus on cover.(verify stylus per BOM)	___Completed
Using a 19396 screw, verify the 2 threaded holes for the aerosol cover do not have any paint in them.	___Completed
Metal strip installed in the carrier, **Elx50/16 units only.**	___Completed ___N/A

By_____ Date_____

DOWNLOAD/TESTING

Refer to 4070020-TP TEST PROCEDURE.

Para	Item	Results/Limits
4.0	Record Base Code, Revision, Version loaded.	_____Base Code____Rev_____Ver
5.0	Record Assay Def, Revision, Version Loaded.	_____Assay Def____Rev_____Ver
6.0	Verify Correct Firmware Installed Per BOM.	___Completed

4070020-DS REV C Final Test Data Sheet Elx50/16 **Certificate # (WO/Unit #)_____**

Para	Item	Results/Limits
7.1	(5) UUT Configured For Correct Manifold (8,12,or 16/8) Check Manifold(s) Auto Cal Performed.	___Pass___Fail ___8 ___12 ___16/8 ___Completed
8.0	(1) Verify S/N engraved On Carrier Is The Same As UUT. (2) Carrier Rests On Feet With No Rocking.	___Pass___Fail ___Pass___Fail
8.1	(3) Verify Aspirate Tubes Are Less Than .023" Above Jig (4) Verify Diff Between Closest And Furthest From Jig Is Less Than .010" (6) Verify Aspirate Tubes Have Moved And Do Not Catch On The Edge (10) Second or Third Manifold Completed Above Testing	___Pass___Fail ___Pass___Fail ___Pass___Fail ___Pass___Fail ___N/A
9.1	(20) **8/12 Ch.** (For Valve Units Also) Record **Line #3** Of Printout. (20) **8/12 Ch.** (For Valve Units Also) Record **Line #4** Of Printout (29) **16 Ch.** (For Valve Units Also) Record Accuracy Test Results. (29) **16 Ch.** (For Valve Units Also) Record CV% Error (30) **Multiple Manifold Units**. Manifold Passes Accuracy Tests (31) **Valves A, B, C** Ensure Proper Operation Of Each Valve With a " Prime"	_____-2.5 - +2.5% ___N/A _____ 0-2.99% ___N/A _____<3.0% ___N/A _____<3.0% ___N/A ___Pass___Fail ___N/A ___Pass___Fail ___N/A
9.2	(13) **8/12Ch**. Residual Test (All Channels) (25) **16 Ch.** Residual Test (All Channels)Ave Residual Max Residual	_____ 0.0-4.00mg ___N/A _____<1.0mg Ave ___N/A _____<1.5mg Max. ___N/A
9.3	Burnin Test **(1 Hr Minimum)** Record Start and Stop Times. **Ensure Supplied Power Supply** Can Be Properly Screwed Into Conn (Threads Ok), And The UUT Does Turn On Properly (Indicating Power Supply Is Working)	_____Start _____Stop Time ___Pass___Fail
9.4	(2) Shake Test Verify Carrier Shakes Burnin Testing	___Pass___Fail
9.5	Proper Cleanup Has Been Finished	___Completed
10.0	Labels And Accessories Applied Or With UUT	___Completed

By _____ Date_____

QC:

NOTE: A Qualified QC Technician Must Perform The Following.

Step	Item	Results/Limits
1.0	Ensure UUT is Free From Scratches and Other Cosmetic Defects.	___Pass___Fail
2.0	Review the Data Sheet For Completeness. Ensure it has Been Signed off. All Printouts are Attached	___Pass___Fail
3.0	All labels are Applied Per BOM	___Pass___Fail

I HEREBY CERTIFY THAT I HAVE REVIEWED ALL ACCEPTANCE DATA, THAT THE PRODUCT MEETS SPECIFICATIONS AND IS ACCEPTABLE FOR RELEASE.

Name or Inspector No.	Title	Date

C O N F I D E N T I A L

Bio-Tek Instruments, Inc.

Model: ELX800, ELx808, PowerWave, uQuant, ELx405, ELX50 and all variations of each

Procedure: 8291007-AW

Title: Field Software Download Procedure

Rev	Description of changes	ECO	Date
A	Release To Production	28381	11/19/96
B	Updated DLOAD commands; Add procedure for loading ASSAY CONFIG; Add ELX50 and PowerWave information	29671	08/05/97
C	Change PoweWave References	29972	10/21/97
D	Add Filter Table note; add reference to µQuant	31209	10/21/98
E	Add Ref to ELx405;Remove Assay from Text	32306	04/06/99
F	Add Ref to ELx50/16 Software	32679	08/10/99

Equipment Required

A PC (386 min) with a 1.44mb 3.5" floppy drive, 1 COM port minimum, mouse and 4 MB RAM
Windows 3.1 or Windows '95 installed on the above PC
75053 Null Modem Serial Cable
8290206-FW Download Utility
Instrument Basecode and Assay Configuration Software Diskettes (see About This Document, below)

Special Notes:

1) We may refer to the Elx800, ELx808, PowerWave, µQuant, ELx405 or Elx50 as the "Instrument" throughout this procedure

2) The purpose of this Download Utility is to allow field upgrading of reader and washer software. If Extensions: Define Protocol (BTI P/N 8290501) is installed on your computer, this Download Utility should not be installed. Un-install the Define Protocol before using the utility.

3) When updated software is downloaded onto the Instrument, any open assays that have been programmed on board the Instrument will be erased and will have to be re-programmed. Please print the assay definitions before

downloading new software. To do this, attach a printer to the parallel port of the Instrument, choose REPORT from the main menu on the Instrument, then press ASSAY and choose the programmed assay definition to print. This printout will detail all assay parameters, except any formulas which may have been defined. (The formulas are printed as part of the assay results report printout; refer to a hardcopy of an assay results report, or step through the define formula section from the front keypad to obtain the formula definition)

Note: The download process will set the reader's filter table to its original default configuration. The user must also check that the reader's filters and filter table positions match after the download. To check the reader's filter table, press UTIL->SETUP->FILTER->. Scroll through each of the filters programmed positions and compare to the physical position on the filter wheel. See reader's operation manual for instructions on how to access the reader's filter wheel.

4) When updated software is downloaded into the Elx50 or ELx405, existing programs are retained. The software download adds new programs to the existing programs on board the washer. In the event the user attempts to download too many assays for the washer program to store, an error message will be displayed during the download process.

About This Document

The ELx800, ELx808, PowerWave, µQuant, ELx405 and ELx50 (all models) have two "levels" of software installed on board:

1) The *Basecode* software and
2) The *Configuration* software

All ELx800 instruments have the same *Basecode* software, part number 7330202-FW
All ELx808 instruments have the same *Basecode* software, part number 7340201-FW
All PowerWave instruments have the same *Basecode* software, part number 7260201-FW
All µQuant instruments have the same Basecode software, part number 7270201-FW
All OEM ELx50 instruments have the same *Basecode* software, part number 4070201-FW
All other ELx50 instruments have the *Basecode* software, part number 4070230-FW
All Elx405 instruments have the same Basecode software,part number 7100201-FW

The *configuration* software part number is dependent on the model of the instrument. Contact Bio-Tek Instruments to obtain current software revisions and versions.

These two levels of software are loaded into the instrument's memory via a computer connected to the serial port of the instrument. This procedure explains the process for downloading both the Basecode and assay configuration software onto the instrument

To load the Basecode and configuration files follow **Procedure A** for Basecode and Configuration files. To load just the Configuration files, use the **Procedure B** for Configuration Download.

A. Loading the Basecode and Configuration files

1. Connect the instrument serial port to the computer COM port, using the 75053 null modem cable.(***If your computer has a 25-pin COM port, it will be necessary to attach a 9-pin to 25-pin adapter to the computer end of the cable***)

2. Turn the computer and instrument ON.

3. BASECODE DOWNLOAD: Insert the Basecode software diskette into the computer's floppy drive.

3.1. Get to the DOS a:\> prompt (or appropriate floppy drive prompt).

3.2. On the instrument, press the Shift and Hidden Key #1 simultaneously. (Hidden key #1 is between the 'CLEAR' and 'ENTER' keys).

The instrument display should read "START **CODE** DOWNLOAD?"
YES NO

IMPORTANT: To properly load the Basecode software, the above message MUST BE displayed on the instrument. If "START ASSAY DOWNLOAD" is displayed, press NO and repeat step 3.2, making certain that Hidden Key #1 is pressed.

3.3. Select 'YES'. The instrument display will read "Clearing Download Area", then "Ready for Download"

3.4. At the computer DOS prompt, type **DLOAD** and press Return (↵). The Instrument display will read "DOWNLOAD IN PROGRESS". (if using a COM port other than COM1, Type **DLOAD x** (**x** indicates the COM port number.))

Examples: (COM1) Type **DLOAD**
(COM2) Type **DLOAD 2**

3.5. The computer will display: File size: 3000513 (may vary)
Bytes sent: xxxxxx (will be counting up)

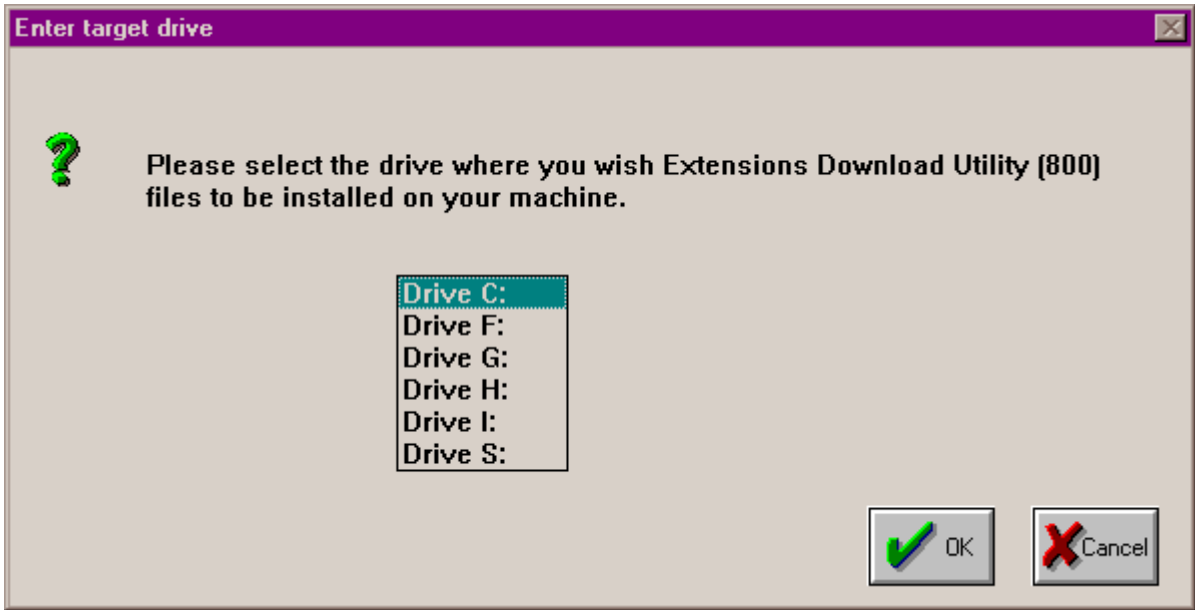
3.6. The download will take several minutes. When complete, the computer will display "DOWNLOAD SUCCESSFUL!" The instrument will display *either* "START ASSAY DOWNLOAD", or will return to the Main Menu. Remove the Basecode diskette from the floppy drive.

4. CONFIGURATION DOWNLOAD: This download is performed using the Download Utility Program, part number 8290206-FW. Start Windows 3.1 or Windows '95 on the computer.

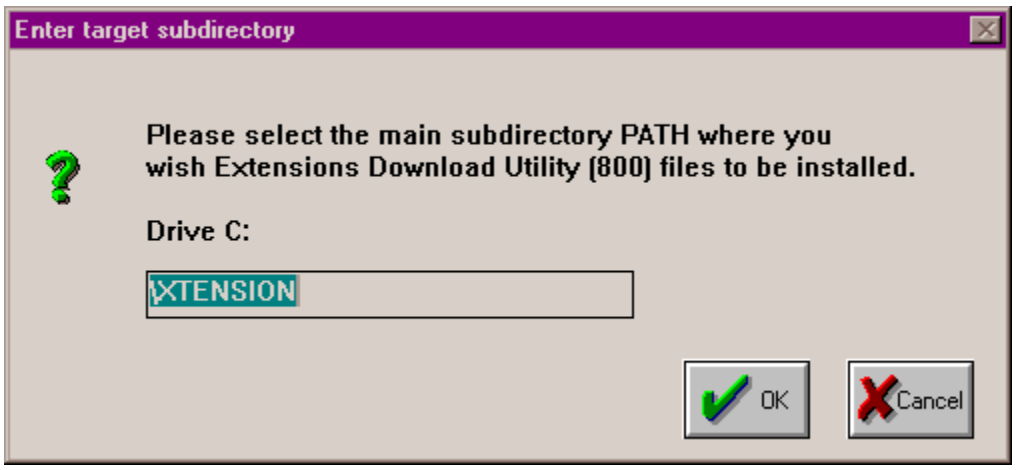
Note: If the Download Utility is already installed on your computer, go to step 4.3

4.1. Install the Download Utility via the File Manager or Windows Explore.(Double click on the Download Utility's ***Winstall.exe*** file)

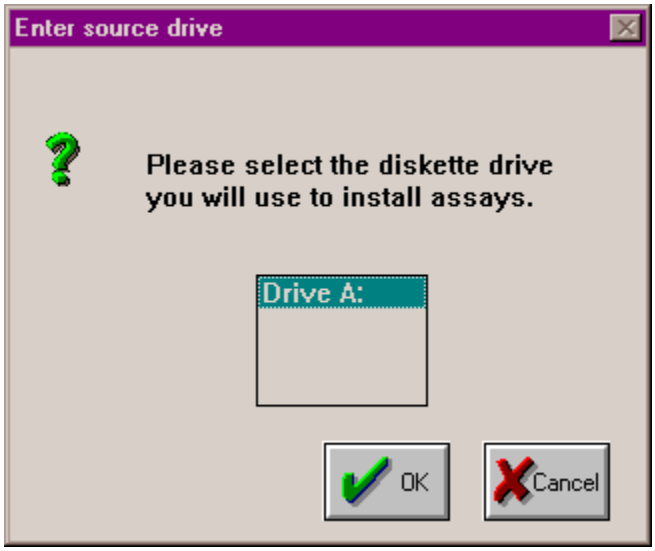
4.2. The install program will ask several questions - it is highly recommended that the user accept all the default settings in the installation process. Once the Winstall.exe is begun, you will see screens similar to those shown below:



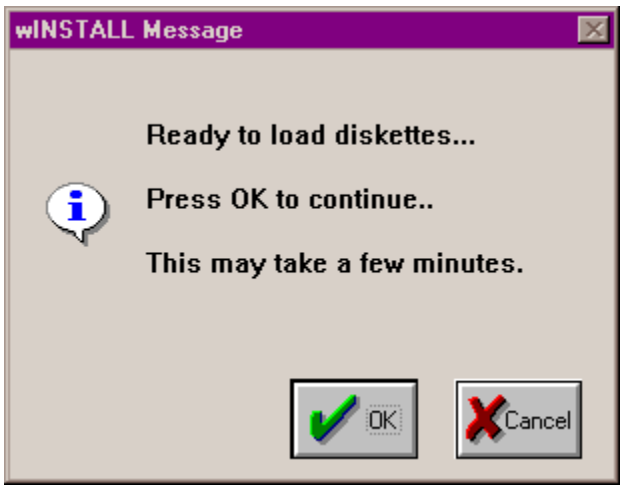
Select C: to install the Download Utility onto hard drive C:


Enter target subdirectory
Please select the main subdirectory PATH where you wish Extensions Download Utility (800) files to be installed.
Drive C:
\XTENSION
OK
Cancel

The Download Utility will be installed in subdirectory C:\XTENSION, unless a different subdirectory name is entered.

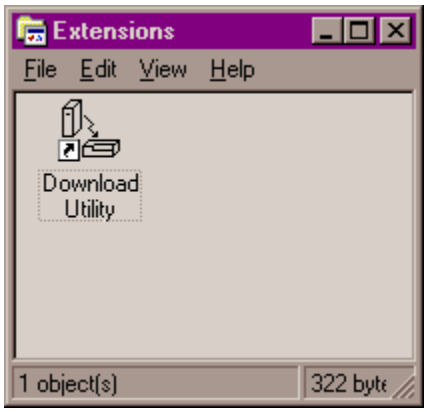


The assay configuration files will be installed from a floppy diskette in drive a: (other floppy drive designators may be available at this screen). It is recommended that the assay configuration files be loaded from a floppy drive.



The Download Utility files are being loaded. In most cases, there is only one Download Utility disk.

When the installation of the Utility is complete, an ICON similar to the icon below will be seen in Windows 3.1 or Windows '95. Remove the Download Utility diskette from the computer's floppy drive.



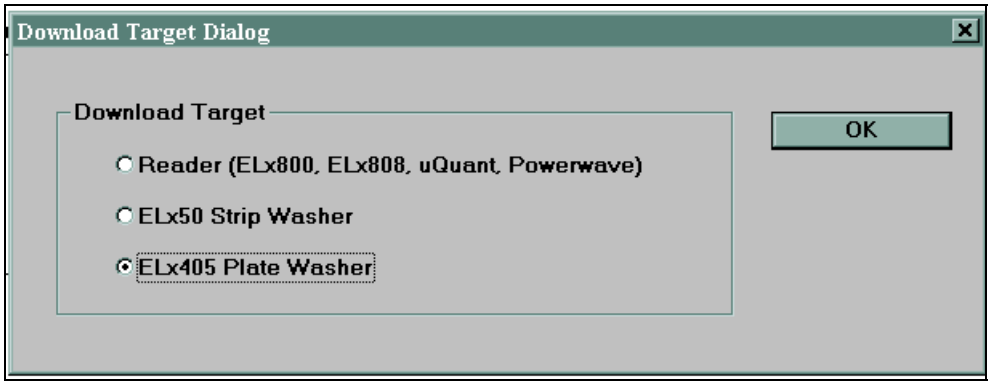
4.3. Insert the appropriate CONFIGURATION diskette into the floppy drive.

4.4. If the instrument display reads "ASSAY DOWNLOAD" (Readers) or “READY FOR DOWNLOAD (Washers), double click on the Download Utility icon. If the instrument is at the main menu, press the Shift and Hidden Key #2 simultaneously (Hidden Key #2 is between the 'Main Menu' and 'Previous Screen' keys.). The instrument should display :

START ASSAY DOWNLOAD?	YES	NO	(Readers)
START PROGRAM DOWNLOAD?	YES	NO	(Washers)

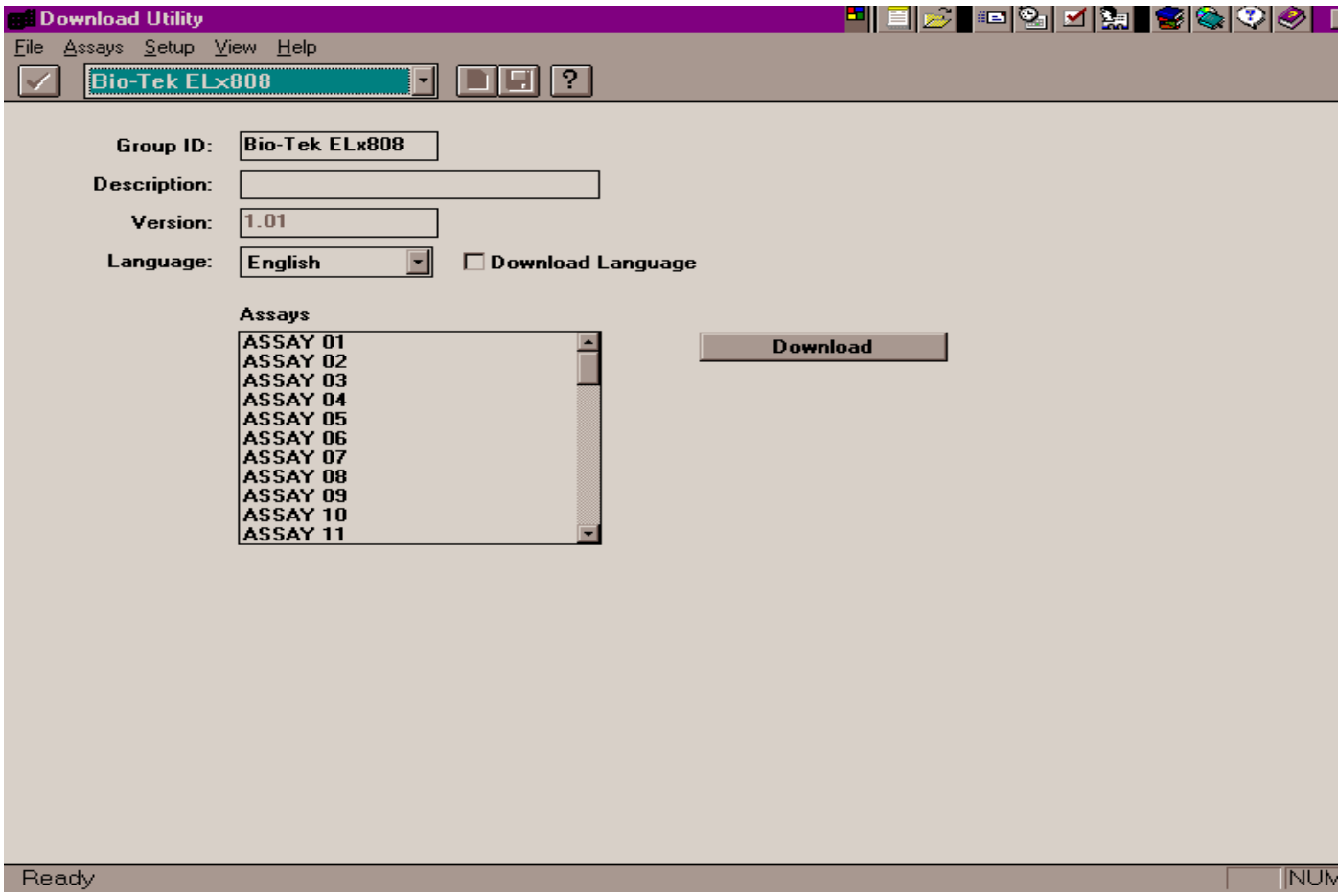
Select “YES” on the instrument. The instrument will display as stated in 4.4. Click on the Download Utility icon. The floppy drive should become active while the

application is initializing. The following screen (or similar) should appear on the computer:



Select ELx800/808 Reader for : ELx800, ELx808, uQuant and PowerWave Readers
Select ELx50 Washer for the Elx50.
Select ELx405 Washer for the ELx405.

After Selecting, click OK. A screen similar to the one below should appear:



The Group ID will be either ELx800, ELx808, PowerWave, µQuant, ELx405 or ELx50, depending on the Configuration software being installed. The names may vary as well, if the Configuration files have been customized by Bio-Tek.

Select the DOWNLOAD button. The Configuration download will begin. If the instrument and computer are not properly connected, or if the instrument display does not read "Start Assay Download", the following message window may appear:

Define Assay Download
Unable to start the download sequence
Error: Message Receive Error.
Check that the reader is ready for download and that the proper cable is being used.
OK

- Check that the cable is connected between the computer and the SERIAL port of the instrument.
- It may be necessary to check/change the configuration of the serial port in the Download Utility (under Setup - Serial Port).

If the instrument does NOT display "Start Assay Download", press the Shift and Hidden Key #2 simultaneously (Hidden Key #2 is between the 'Main Menu' and 'Previous Screen' keys.). The instrument should display :

START ASSAY DOWNLOAD?	YES	NO	(Readers)
START PROGRAM DOWNLOAD?	YES	NO	(Washers)

Choose YES, then double click on the DOWNLOAD button in the Download Utility start the process again. After the configuration download is complete, the Instrument will re-initialize and return to the Main Menu. Check that the current software is loaded onto the instrument by pressing UTIL, TEST, CHKSUM. The instrument display will scroll through the seven digit part numbers and versions of both the Basecode and Configuration part numbers. Check them against the list at the end of this procedure. The software update is complete.

ELx50/16 Users
ELx50/16 software defaults to an 8 channel manifold configuration at download. When the download is complete, it is important to set up the instrument for the appropriate manifold. Press UTIL, then SETUP, then MANFLD and select the desired manifold.

IMPORTANT!!!

To check your Instrument's NEW software configuration, from the instrument's Main Menu, press UTIL, then TESTS, then CHKSUM. Record the information below and **fax this portion** to BTI Technical Assistance Center at **802-655-3399**, so that we may update your instrument records. If you are updating more than one instrument, please make note of all serial numbers of updated instruments.

I have successfully updated my Bio-Tek Autoreader/Autowasher,

Model _____
S/N:_____.

The new software installed is : _____ Version _____
Code Checksum: ( )
_____ Version _____

Company name_____ Signature _____Date_____

B. Loading Assay Configuration Files Only.

1. Connect the instrument serial port to the computer COM port, using the 75053 null modem cable.(***If your computer has a 25-pin COM port, it will be necessary to attach a 9-pin to 25-pin adapter to the computer end of the cable***)

2. Turn computer and instrument ON.

2.1. On the instrument, press the Shift and Hidden Key #2 simultaneously. (Hidden key #2 is between the 'Main Menu' and 'Previous Screen' keys).

The instrument display should read "START ASSAY DOWNLOAD?"

YES NO (Readers)

START PROGRAM DOWNLOAD?

YES NO (Washers)

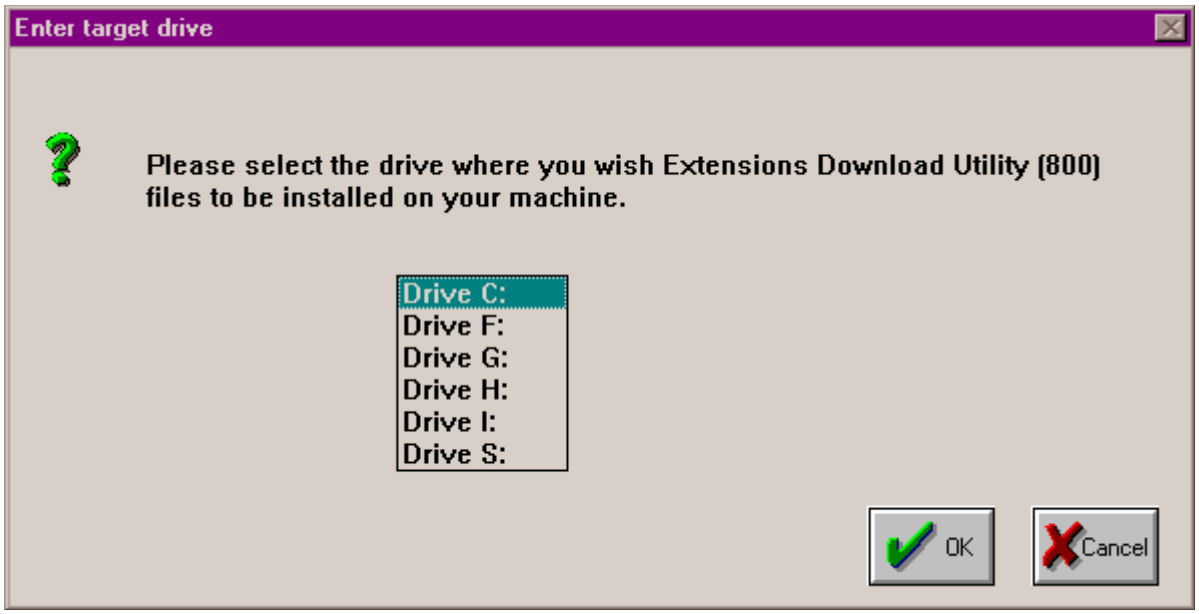
Select 'Yes'. The instrument will now wait for the download.

3. The download is performed using the Download Utility Program, part number 8290206-FW. Start Windows 3.1 or Windows '95 on the computer.

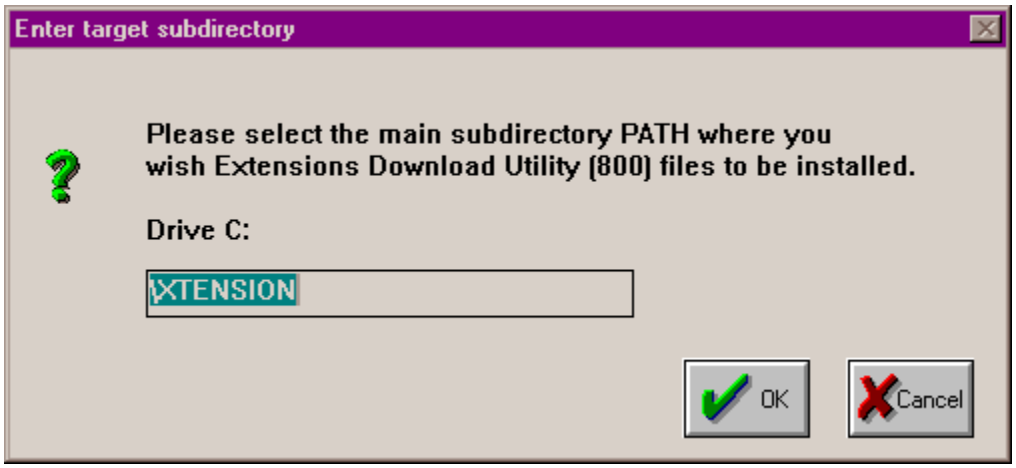
Note: If the Download Utility is already installed on your computer, go to step 3.3

3.1. Install the Download Utility via the File Manager or Windows Explore.(Double click on the Download Utility's ***Winstall.exe*** file)

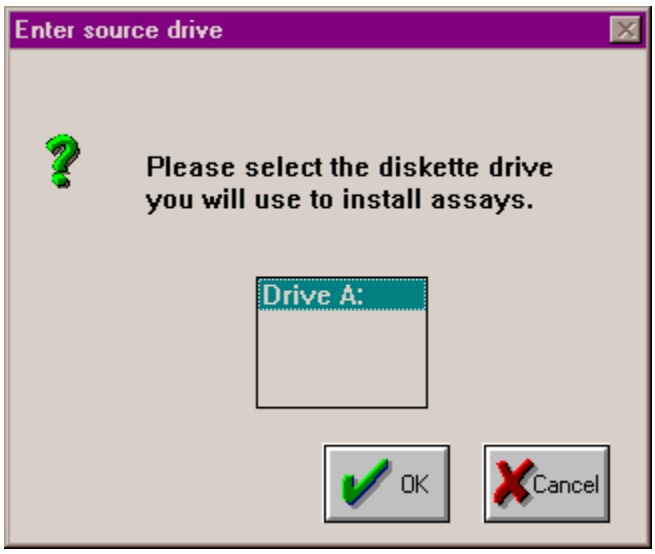
3.2. The install program will ask several questions - it is highly recommended that the user accept all the default settings in the installation process. Once the Winstall.exe is begun, you will see screens similar to those shown below:



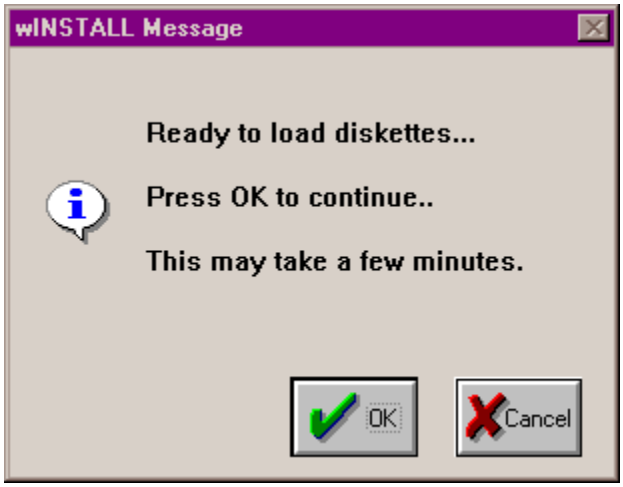
Select C: to install the Download Utility onto hard drive C:


Enter target subdirectory
Please select the main subdirectory PATH where you wish Extensions Download Utility (800) files to be installed.
Drive C:
\XTENSION
OK
Cancel

The Download Utility will be installed in subdirectory C:\XTENSION, unless a different subdirectory name is entered.

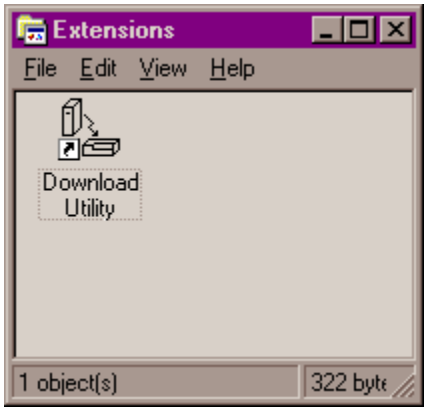


The configuration files will be installed from a floppy diskette in drive a: (other floppy drive designators may be available at this screen). It is recommended that the configuration files be loaded from a floppy drive.



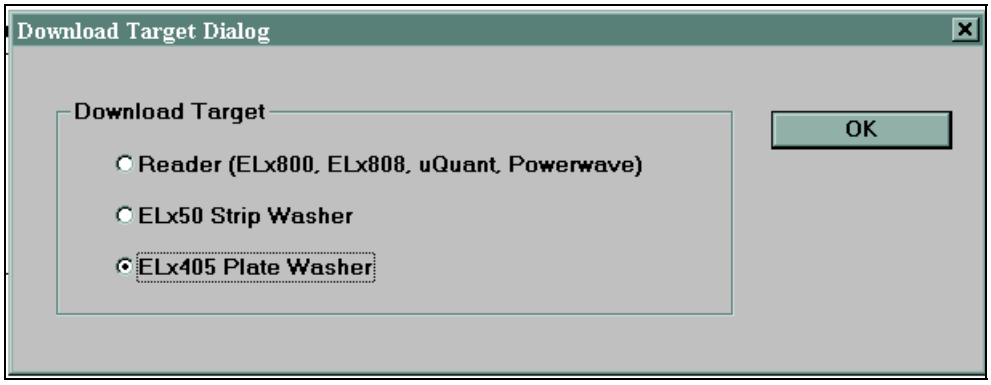
The Download Utility files are being loaded. In most cases, there is only one Download Utility disk.

When the installation of the Utility is complete, an ICON similar to the icon below will be seen in Windows 3.1 or Windows '95. Remove the Download Utility diskette from the computer's floppy drive



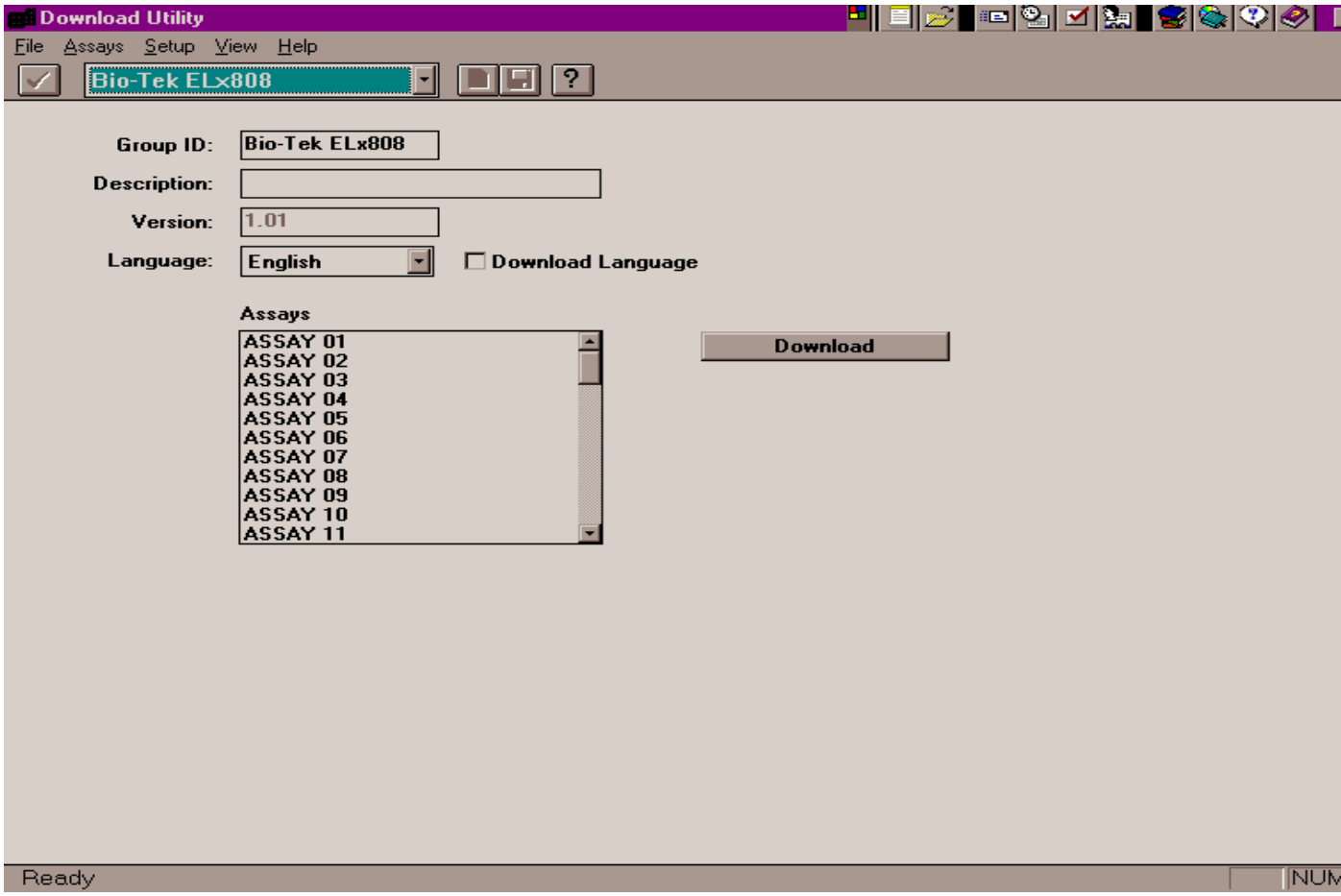
3.3. Insert the CONFIGURATION diskette into the floppy drive.

Double click on the Download Utility Icon. The floppy drive should become active while the application is initializing. The following screen (or similar) should appear on the computer:



Select ELx800/808 Reader for : ELx800, ELx808, uQuant and PowerWave Readers
Select ELx50 Washer for the Elx50.
Select ELx405 Washer for the ELx405.

After Selecting, click OK. A screen similar to the one below will appear:



The Group ID will be either ELx800 or ELx808, PowerWave, µQuant, ELx405 or ELx50. The names may vary as well, if the Configuration files have been customized by Bio-Tek.

Select the DOWNLOAD button. The Configuration download will begin. If the instrument and computer are not properly connected, or if the Instrument display does not read "Start Assay Download", the following message window may appear:

Define Assay Download
Unable to start the download sequence
Error: Message Receive Error.
Check that the reader is ready for download and that the proper cable is being used.
OK

- Check that the cable is connected between the computer and the SERIAL port of the instrument.
- It may be necessary to check/change the configuration of the serial port in the Download Utility (under Setup - Serial Port).

If the instrument does NOT display "Start Assay Download", press the Shift and Hidden Key #2 simultaneously (Hidden Key #2 is between the 'Main Menu' and 'Previous Screen' keys.). The instrument should display : START ASSAY DOWNLOAD?
YES NO (Reader)

START PROGRAM DOWNLOAD?
YES NO (Washer)

Choose YES, then double click on the DOWNLOAD button in the Download Utility start the process again. After the configuration download is complete, the instrument will re-initialize and return to the Main Menu. Check that the current software is loaded onto the instrument by pressing UTIL, TEST, CHKSUM. The instrument display will scroll through the seven digit part numbers and versions of both the Basecode and configuration part numbers. Check them against the list at the end of this procedure. The software update is complete.

IMPORTANT!!!

To check your instrument's NEW software configuration, from the instrument's Main Menu, press UTIL, then TESTS, then CHKSUM. Record the information below and **fax this portion** to BTI Technical Assistance Center at **802-655-3399**, so that we may update your instrument records. If you are updating more than one instrument, please make note all serial numbers of updated instruments.

I have successfully updated my Bio-Tek Autoreader/Autowasher,

Model _____
S/N:_____.

The new software installed is : _____ Version _____
Code Checksum: ( )
_____ Version _____

Company name_____ Signature _____Date_____